
**ROLE OF
SAMPLE
SURVEYS
IN
EDUCATION**

ROLE OF SAMPLE SURVEYS IN EDUCATION

EDITED BY

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गोपनीय संस्कृति



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NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

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FOREWORD

The papers included in this book highlight the role of sample surveys in education and show the possible areas in which sampling methods can be effectively used for collection of educational data. These papers were presented in a seminar on Role of Sample Surveys in Education organised by the Council in October, 1980. The Seminar Report was brought out in 1981, which generated some interest among educational planners and administrators in the use of sampling techniques for collection of educational data needed for decision making. In view of this interest, as well as the importance which Unesco is attaching to the use of sample survey method for collection of educational statistics and improvement of quality of educational data, it has been decided to publish the papers presented in the Seminar in the form of a book. It is hoped that the book will be appreciated and found useful by all those who are interested in application of sample survey methods in education. I am grateful to Dr. A.B.L. Srivastava and Shri. C.L. Kaul in the Survey and Data Processing Unit for editing these papers and bringing them out in this form.

S. K. MITRA

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*New Delhi
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Introduction

A seminar on the Role of Sample Surveys in Education was organised by the Survey and Data Processing Unit of the National Council of Educational Research and Training (NCERT) from October 13 to 15, New Delhi. The seminar was organised mainly to highlight the useful role of sample survey methodology in providing educational data that are needed for educational planning, policy making and administration. The specific objectives of the seminar were as follows :

- i. To discuss the role of sample surveys in providing educational data required for policy making, planning, etc.
- ii. To review the sample surveys and other educational surveys already conducted in India.
- iii. To identify the areas in which sample surveys may be undertaken regularly or on *ad hoc* basis in future.
- iv. To suggest the role of the different Central and State level agencies in promoting the use of sample surveys in conducting the surveys.

Participation

The seminar was attended by twenty-one participants, including six experts from different parts of the country, twelve representatives of the Ministry of Education and Culture, Planning Commission, Central Statistical Organisation, Institute of Applied Manpower Research, Institute of Economic Growth, National Sample Survey Organisation and three officers, representing the Departments of Education of Uttar Pradesh, Punjab and Maharashtra. Seventeen faculty members of NCERT, including twelve from Survey and Data Processing Unit, also attended the Seminar.

Inaugural

Dr. Gautam Mathur, Director, Institute of Applied Manpower Research, inaugurated the seminar. In his inaugural address, Dr. Mathur made a plea for using sample survey methodology for collecting edu-

tional data as it is more economical, and usually provides more accurate data. He discussed the need for educational data in the wider perspective of economic and educational policies of the country. He said that educational policies have to be related to the model adopted for economic development of the country, and educational data should help in proper evaluation of these policies. Summing up the points made by Dr. Mathur, Dr. Shib K. Mitra, Director, National Council of Educational Research and Training, observed that it was necessary to avoid mismatch of education with economy and hence it was important to develop a conceptual framework within which the activities of educational planning and data collection could be visualised. He said that the time has come for systematising sample surveys and other data collection programmes so that the system as a whole could help in evaluation of the different policy models and testing of different hypotheses regarding future development of education in the country.

Documentation

In all, twelve papers were contributed by experts to the discussion on the role of sample surveys and the areas in which such surveys are needed in the field of education. One of the papers was a report of a sample survey conducted by Dr. B.N. Sarkar at the Indian Statistical Institute, Calcutta. The report of the seminar, giving the main highlights of discussions and recommendations, was brought out in mimeographed form in 1981. There has been a demand for the papers presented in the seminar. Therefore, it was decided to publish eleven of the papers in a book form for the use of potential clientele.

The paper entitled 'The Need and Application of Sample Survey Methods' by Dr. A.B.L. Srivastava served as the keynote to the theme of the seminar. His paper points out that all the data that are needed for effective educational planning and decision making in education, cannot be easily made available on complete enumeration basis, and even if an attempt is made to do so, the cost would be enormous and the reliability of the data would be questionable. Well planned sample surveys can prove to be very useful in providing such data at relatively less cost and in less time. He discusses different types of sample surveys that could be conducted in the field of education, starting from those meant for filling the existing data gaps, to those which help in evaluation of educational programmes, or in assessment of the performance of the educational system.

Sample studies can also provide data on the utilisation of existing facilities, wastage in education, teachers, educational materials, and

students' achievement, home background, etc. Sampling investigations can even be used to provide a check on the quality of census data. The paper also discusses the problems experienced in providing available and timely data on schools, teachers and students by the Ministry of Education through its annual census of educational institutions. It gives a brief review of the educational data available from other sources viz., All-India Educational Surveys conducted by NCERT, decennial census of population and National Sample Surveys. Finally, it mentions the advantages as well as the limitations of sampling approach, and suggests some measures which could lead to a more effective use of sample surveys in the educational information system of the country. Some priority areas in education, where sample survey methodology could be used profitably to provide crucial information, have also been identified.

The paper on 'Role of Sample Surveys in Education' by Prof. P.K. Bose indicates a number of items on which adequate information does not exist at present and for which sample surveys could be organised to provide the much needed information. Some items are student wastage, educational costs, library facilities, equipment and instructional materials in schools, and employment position of educated manpower. The paper also points out the advantages of sampling approach in terms of reduced cost, greater speed, greater scope of covering items and accuracy. In conclusion, a plea is made for revamping the entire information system for providing quality data on increasing number of items so that an improvement takes place in decision making in the field of education by making use of such data.

The paper on 'Sample Survey Methods in Education' by Dr. Daroga Singh deals with the importance of sample survey methods in the field of education. It starts with observations on the problems of educational institutions, students and teachers in India, and the need for basic data to tackle these problems effectively. In the paper, it is suggested that the sample survey methods developed for collecting data in other fields, could be profitably used to collect different kinds of educational data, particularly in a vast country like India, where collection of such data on a census basis would require enormous resources. The paper discusses features of sample survey methods, the definition of survey variables, the sampling procedure and the process of estimation. It deals with the need for clearly spelling out survey objectives and the type of data to be collected, and emphasises the importance of randomness in selection procedure. The paper also discusses non-sampling errors and points out the difficulties in collecting reliable data of socio-economic character such as income and expenditure. The paper provides a brief review of the sampling procedures suitable for educational surveys. It stresses the

need for a proper collaboration between the sampling experts and educationists in planning and organisation of educational surveys.

The paper on 'Areas in the Field of Education in which Sample Surveys are Needed' by Dr. R.N. Gupta indicates different items on which information is needed for the purposes of educational planning and management of educational system. It reviews the existing system of educational statistics for which the Ministry of Education is largely responsible. It included a list of items on which data could be collected on a sample basis and suggests how sample survey of educational institutions and households could be conducted to collect these data periodically. A scheme of organising annual rounds of educational surveys, covering different items in each round on the pattern of National Sample Surveys, is also proposed.

The paper on 'Collection of Educational Statistics through the National Sample Survey' by Shri S. K. Banerjee points out items relating to education on which data has been collected in the 35th Round (1980-81) of NSS. The paper also suggests a two-stage sampling procedure for educational surveys and discusses some administrative problems in the organisation of such surveys on a regular basis.

The paper 'All-India Educational Surveys' by Shri K. N. Hiriyanniah gives the objectives, organisation and the main findings of each of the four surveys conducted so far. The first survey was conducted in 1957 by the Ministry of Education, and the Second, Third and Fourth Surveys were conducted by NCERT to provide educational data for the years 1965, 1973 and 1978, respectively. All these surveys have been conducted on a complete enumeration basis, and their main objective was to assess the availability of educational facilities, particularly in rural areas, and to provide information on enrolment, teachers, physical facilities, etc. in the existing institutions. These surveys have helped in planning educational facilities at the block level, and have provided very useful comparative data on a number of items particularly on rural habitations served by primary, middle and secondary schools within different distance slabs.

A closely related paper by Shri C. L. Kaul entitled, 'A Review of Educational Surveys in India', gives an overview of the surveys conducted by various agencies, and in particular, by NCERT. The paper gives the objectives of these surveys and indicates their scope, geographical coverage, etc. The review, though not exhaustive, gives an idea of the different types of educational surveys conducted in India.

The papers that mainly aimed at identifying the areas in which educational surveys are needed, and suggested the types of surveys that could be conducted in future, include 'Sample Surveys in Assessment and

Evaluation' by Dr. R.G. Misra and Shri P.N. Arora of NCERT. The paper discusses a few problems concerning the present system of evaluating the achievement of students and suggests that sample studies could provide useful information for tackling these problems. It also gives a brief review of some sample investigations already conducted in this field, on such topics as common errors in English at the higher secondary level, failures in school internal and Board examinations, malpractices in examinations, etc. Areas in which sample studies can be conducted in the field of examination to provide information for improvement of the examination system have also been suggested.

The next paper is on 'Sample Surveys to Ascertain the Educational Facilities for the Scheduled Castes and Scheduled Tribes' by Shri J.C. Sexena. It stresses the need for sample surveys to study the attendance and retention rate of the school children belonging to the Scheduled Castes and the Scheduled Tribes. It also suggests surveys for studying the role of the different agencies involved in the task of providing education to these children and the problems faced in coordinating their efforts. The paper points out that surveys are very much needed to study the problem of school dropouts and effectiveness of incentive programmes for retaining children in school, and suggests sample investigations to examine the relevance of the existing curriculum and to study the quality of available teachers. These and some other surveys with focus on the problems of Scheduled Caste and Scheduled Tribe children would go a long way in improving their educational standard which is relatively low at present.

The paper on 'Use of Sample Surveys in Economics of Education and Educational Finances in India' by Dr. C.B. Padmanabhan comments on the trend in the expenditure on education by the government, local bodies, parents and private agencies. It observes that there has been considerable increase in government spending since 1950-51, and points out certain shortcomings in the data on educational finance in particular, under-reporting of private expenditure, and lack of information on other than government sources of finance. Accordingly, more accurate and detailed information should be available on private expenditure on education and on unit costs for different levels of education. It is suggested that sample survey approach should be adopted for assessing the equipment and quality of teachers in schools, estimating private costs of education, studying relationship between cost and quality of education, studying education-occupation relationship, and assessing the contribution of education to the productivity and earning of an individual.

The paper on 'Role of Sample Surveys in Education, Illustrated by an example of Wastage in College Education' by Dr. V.K. Sethi discusses

the need for collecting accurate data on institutional characteristics, using sample survey approach. It suggests employment of a trained investigator, if necessary. It also highlights the importance of data on opinions and attitudes of students, teachers, parents and other members of the community on educational matters, which can be collected only on a sample basis. It then considers the problem of wastage in education, and indicates how policy decisions can be taken about modification of the existing courses on the basis of information on failure rate and by using the knowledge gained in specific jobs acquired after training. According to the paper, sample surveys of students and school leavers could provide valuable data to study this aspect of educational wastage. A two-stage sampling scheme for such surveys, with institutions as the first stage units, and students as the second stage units, is also outlined.

The Need and Application of Sample Survey Methods in Education

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Introduction

The need for a good data base for formulation of educational policies, planning of educational facilities, improvement of educational system and a proper management of educational services cannot be denied. While this need is strongly felt by all those concerned with the development of education at the Centre and in the States, and particularly by educational planners, it is an accepted fact that reliable and up-to-date statistics are hardly available on a number of items which are considered crucial for effective planning and decision making. It is no longer the prerogative of an education planner and decision maker to take decisions on the basis of hunches and intuitive reasoning; now decisions have to be taken on the basis of hard facts and information extracted from quantitative data, using appropriate techniques of data analysis.

It is important that an information system is built up for providing the required data for policy formulation, planning and administration purposes in the most efficient manner. It implies that items on which data are needed are properly identified, and then efforts are made to collect all these data in such a way that they have the desired accuracy, and minimum resources are used for collecting and making them available in time for use. Well planned sample surveys have a great role to play in meeting the data needs of the educational system, and as such have to become an integral part of the educational information system in the country.

Need for Surveys

The need for surveys and studies for strengthening the data base has been felt for quite some time. The Education Commission (1964-66)

in its Report (Section 18.39) mentioned, "what is needed is the collection of information on important educational topics from the State Governments according to a well-planned schedule and its publication, with proper analysis, for the information of all concerned."

The Commission further observed that a good statistical service was needed with three main functions : (a) to collect, publish and interpret educational data ; (b) to conduct statistical studies, investigations and surveys ; and (c) to make projections and forecasts for the future. It noted that the existing statistical service leaves a good deal to be desired, and recommended that a master plan should be prepared for the publication of educational data and for the surveys and investigations which should be conducted from time to time. It even suggested that the Ministry should create a new unit for the conduct of special surveys and investigations, and strengthen the statistical units of the State Departments of Education with the same objective. It will not be out of place to mention that the Survey and Data Processing Unit of the National Council of Educational Research and Training was established in 1969, keeping in view the recommendations of the Education Commission about strengthening the machinery for carrying out periodical surveys on different aspects of education. These surveys, it was observed, were to provide bench-mark data in different sectors and were to assist planning and policy formulation.

It is thus clear that for a long time it has been realised that the existing machinery for compilation of educational statistics is rather weak and the data that are compiled need to be supplemented with data from periodic surveys and investigations. Not that such surveys have been totally lacking ; in fact, some important all-India surveys have been conducted during the last 10 to 15 years. But what has been lacking is a master plan for such surveys and a scheme in which the role of periodical sample surveys and other types of surveys is clearly defined within overall framework of educational information system. The surveys in the past have been conducted mostly on the basis of *ad hoc* decisions of the Government without a clearcut policy about their periodicity, their scope and the use to be made of the survey data. This seminar perhaps can provide some guidelines in this regard so that in future the educational surveys are conducted according to a set policy for such surveys.

Of course, there is need and scope for organising educational surveys at the all-India and state levels to meet specific data needs. Some of these can be of census type and others sample surveys. Again, some can be organised periodically, once in 3 or 5 years, and others on an *ad hoc* basis, depending on the problems being faced at any given time. There can be variation in the nature of data to be collected, target population

and geographic area to be covered, and the methodology used for data collection. What we need is a policy, a strategy and a machinery which can be harnessed for organisation of educational surveys of different types.

The Function of Sample Surveys

Sample surveys can be conducted for a variety of purposes, though their main contribution has to be in the area of supplementing the data that are normally available through the annual census of educational institutions. In particular, the following are some of the broad purposes for which sample surveys can be conducted in India in the field of education :

- i. To provide the data on such items which are important for educational planning but on which no information is being collected in the annual educational census (such as, data on age, of students, repeaters, private costs of education, etc.)
- ii. To help in checking the accuracy of the data collected in the annual census.
- iii. To provide the data needed for monitoring and evaluation of educational programmes and projects and periodic review of the educational system.
- iv. To provide data for developing programmes of qualitative improvement of education. This includes sample surveys for curriculum development, use of educational technology and evaluation of textbooks, etc.
- v. To provide data for diagnostic purposes, that is, to get an insight into the problems and shortcomings of the educational system.
- vi. To provide data for assessment of the achievements of education. This includes sample surveys for assessing students' scholastic achievement and attainment in other areas.
- vii. To provide data on utilisation of existing educational facilities and the extent of benefits derived by the target group from any programme of education. This includes sample surveys to study wastage in education, average daily attendance, unutilised equipment, etc.
- viii. To provide data to study the inequality in opportunities for education. This includes sample surveys for studying regional imbalances and inequalities in provision of educational facilities for girls and children from socially or economically backward

- classes such as Scheduled Castes and Scheduled Tribes.
- ix To provide data on home backgrounds of students, attitudes, view of parents and other members of society on educational matters; and activities of school-leavers and dropouts, etc. Such surveys may involve collection of data from a sample of households as in the case of socio-economic surveys. This will be different from the educational surveys in which the target population is that of educational institutions.

Existing Sources of Educational Data

For educational planning and administration, certain types of data are needed periodically, usually once in a year. For other purposes the relevant data can be collected and analysed as and when necessary. Let us examine the main sources of educational data which meet the need for educational planning, policy making and administration.

(i) *Annual Educational Census* : Every year the Ministry of Education and Social Welfare collects educational statistics with the cooperation of the Education Departments of the States and Union Territories. The data consist of the number of institutions for different levels and types of education, enrolment by grade and sex and number of teachers (trained and others). Also data are collected on recurrent and capital costs. The date of reference is 30th September for most of the States. The forms for the State tables are prescribed by the Centre, but the States devise their own forms for collecting data from the institutions. Even the procedures of compiling the statistics differ from State to State ; some have a centralised system and others have a cumulative system in which the tables are compiled manually first at the block level then at the district level on the basis of the block tables already compiled and finally at the State level using the district tables. Of course each system has its own advantages and disadvantages, but the former is regarded as more efficient if facilities for mechanical/computerised data processing are available.

These educational statistics so compiled at the national level suffer from several shortcomings. There is usually considerable time lag (of 3 to 4 years) between the date of reference and the time when the statistics are finally made available at the national level in published form. In the past, the time lag was even longer and it was said that educational statistics in India serve more the purpose of historical research rather than educational planning. The time lag was of 6 to 7 years in the sixties, but now it has been reduced to 3 to 4 years by simplifying the forms and doing away with certain

items of information, such as age of students and repeaters in each class. Unfortunately, in spite of the sacrifice of information made for reducing the time lag, it is still far from what the educational planners would like it to be.

The main reasons for the slow progress in reducing the time lag have been identified as shortage of trained staff in the States and poor response from colleges and private unaided institutions, apparently due to lack of authority of the departments of education over them. However, the weakness of the state machinery for data collection is not only responsible for excessive time lag, but also for inaccuracies in data and lack of coordination between planning and statistics, which leads firstly to poor coverage of items on which planners need data and secondly, inadequate utilisation of whatever statistics are collected and made available to them for use. So far as the reliability of information is concerned, there is a feeling that enrolment figures are sometimes misreported and are even deliberately distorted, but in the absence of a suitable programme for checking the accuracy of data, the extent of inaccuracy remains a matter of conjecture. Time and again, recommendations have been made for carrying out a sample check of the data (by actual verification of, say 10% of the institutional questionnaires), but so far no progress has been made in this due to lack of staff and other administrative problems.

With regard to the data that are needed for educational planning but are not collected in the annual census, the Ministry has proposed to collect them either on a census basis once in 5 years, or on a sample basis through *ad hoc* theme-oriented studies. In fact, the idea of making increasing use of sample surveys, for providing educational statistics that cannot be covered in the annual or quinquennial censuses of educational institutions without affecting the quality of data, has yet to find favour with the educational administrators.

ii. *All-India Educational Surveys*: Four such surveys have been completed so far, starting from the First Survey which was conducted by the Ministry of Education in 1957. All the subsequent surveys were organised by the National Council of Educational Research and Training, the Second Survey in 1965, the Third Survey in 1973, and the Fourth in 1978. Of these the Third Survey was most comprehensive as it covered all aspects of education and extended its scope to all levels and types of educational institutions, the work of the survey was shared by some other institutions, in particular, the University Grants Commission (for higher education), Institute of Applied Manpower Research (for technical and vocational education), and National Institute of Educational Planning and Administration (for educational administration and super-

vision). All these surveys were conducted on a complete enumeration basis, covering all the institutions and all the villages in the country. These surveys have provided a wealth of information on various entities in educational system, e.g. students, teachers, school buildings, incentive schemes like provision of mid-day meals. But most significant contribution of these surveys has been the identification of habitations with and without schooling facility and enumeration of the habitations according to population and the distance within which facilities for primary, middle and secondary education are available. The last survey in this series was the Fourth All-India Educational Survey which provides data as on 30th September 1978. These surveys have helped in assessing the gaps still left in provision of educational facilities, particularly at the primary level, and utilisation of these facilities in terms of students enrolled. The survey data have been extensively used in educational planning at different levels, but that does not mean that these surveys were free from defect. In fact, quite a few things could have been done differently in planning and organisation of these surveys, particularly the Third Survey which was rather ambitious in its coverage and did not fully anticipate the problems of supervision, data analysis, etc. Considering it in retrospect, one can point out that data on a number of items covered in this survey could have been collected on a sample basis, thus lightening the burden of data collection and analysis considerably.

Actually we need a policy with regard to such all-India educational surveys. There should be a clear delineation of items on which data can be collected on a sample basis, when some planning has to be done at the lowest level (say, block level), one has to cover all the units. However, when the information is needed only at the State and all-India levels, there is no reason why one should not resort to sample surveys. Further, there should be a policy about the periodicity of such surveys, which may be linked with the data requirements of the Five Year Plans. And then there should be a machinery at the Centre and in the States to plan and conduct such surveys, reviewing the position from time to time about the data needs and methodology to be used for collection of data.

iii. *Other Sources of Data*: Among other sources of educational data, the decennial population Census can be regarded as an important source of information on literacy, educational attainment of the population and the population enrolled in schools and other educational institutions. Since the data are population based, they provide an interesting comparison with the institutional data on enrolments obtained through annual educational census. The population census also provides data on nume-

rous demographic characteristics which are of immense value to educational administrators and planners. The National Sample Surveys have only recently attempted to provide data on educational characteristics (children attending school, expenditure on education, etc.) in the 35th round which aims at studying the social consumption pattern of the population.

Other Surveys conducted by the National Council of Educational Research and Training in the field of education have not so much provided data for educational planning, but for giving an insight into such problems and issues as educational wastage, factors responsible for variation in scholastic achievement of students, availability of certain facilities and equipment in schools, etc. Also there have been area skill surveys, and surveys for development of suitable vocational courses and environment related curriculum for a given area. Such surveys will continue to have considerable importance in future also, and need to proliferate in order to provide greater understanding of the problems that confront the educationists and educational planners so as to enable them to find realistic and satisfactory solution to these problems.

Advantages and Limitations of Sample Surveys

It will be useful to analyse what sample surveys can or cannot achieve in the field of education, and in what situation it is profitable to resort to sample investigations.

It is well known that collection of data through a sample survey, in general, requires less resources, less manpower, and produces results in less time, than a complete enumeration with the same objectives. Of course, results of sample survey are subject to sample error, but this error can be estimated and also reduced to a tolerable limit by the choice of a suitable sampling design and size of sample. While there is no sampling error in the case of complete enumeration, the non-sampling errors, which arise due to misreporting, bias of respondents, lack of proper checking arrangements, oversight in tabulation of data, etc. are usually more in a census type investigation than in a sample survey. That is why, a sample survey is often regarded as a more accurate source of information than census.

With all these advantages, sample surveys are not always looked upon with favour as source of reliable information, particularly by the administrators. The reason for this is mainly psychological—a mistrust of information that is based on only a small fraction of the total population. Any results that seem to be deviating from the expected trend are

regarded as unreliable due to the use of sampling. Greater acceptance of the results of sample surveys, however, is expected when well-designed sample surveys are conducted frequently and a comparison of survey findings is provided with the results of complete enumeration, where such results are available.

But apart from the skeptical attitude of the data users towards sample surveys, there are some genuine limitations and problems in application of sample survey methods which need to be recognised. In brief, these are as follows.

i. If information on certain items is required for each small area or small sub-population, then sample surveys may not prove to be very feasible. For example, one will have to cover all the institutions in an area, if it is intended to assess the requirements of each institution. Sample surveys will be useful in providing global estimates for a region or a fairly large group of institutions, teachers or students.

ii. For educational planning, information is needed both on stock and flow of students. For flow statistics, the information about repeaters, dropouts, etc. is related to enrolments in the previous year. While sample surveys can provide good 'stock' statistics, their role in providing 'flow' statistics is rather limited. It will be necessary to examine the methodological problems carefully in using sample surveys for estimating repeater and dropout rates or other flow characteristics.

iii. There is a lack of sufficiently qualified personnel in the States for designing sample surveys, organising the data collection and preparing estimates of population parameters from sample data.

iv. There is a lack of strategy and a comprehensive plan for building up the necessary infra-structure for conducting regular sample surveys. This refers to the administrative set-up for the surveys, procedures for problem identification, training of staff, construction of sampling frames for the surveys and arrangements for data processing, etc.

Methodological Issues

For progressive use of sample surveys to provide educational data, one has to give due attention to the methodological problems, such as design of sample surveys, size of sample, tools of data collection, analysis of data, etc. Of course, this calls for the deployment of necessary technical expertise to attend to these problems when a survey is to be undertaken. But, assuming that sample surveys have to be regularly conducted to collect some routine data as well as data relating to some specific problems arising from time to time in the States, one can visualise certain areas in which action will be required.

i. First, sampling frames have to be developed for the populations, which will be common target populations for most of surveys. That means up-to-date lists of different kinds of schools should be available, with information about enrolment, number of teachers, etc. in each school. In large scale surveys, one may have to build up a master sample of schools to serve as a frame. This would consist of lists of schools for scientifically selected samples of areas or administrative units such as blocks and tehsils.

ii. Schemes for stratification of the population should be carefully worked out for different types of surveys. Generally, one has to use stratified multi-stage sampling, when it is necessary to sample, first of all, geographical units (e.g. blocks), then institutions and, finally, teachers or students. Since schools vary considerably in size, sampling with probability proportion to size (PPS) may also prove to be very effective. When a sample survey is to be conducted scientifically, due attention has to be paid to the preparation of a proper sample design, which though complex, should be most economical and otherwise appropriate for the situation.

iii. The question of sample size is related to the type of design used, but often *ad hoc* decisions are taken about the size of sample, which are not so much based on the consideration of precision desired in the sample estimates and the extent of variability existing in the population in respect of the educational variables being investigated. As is well known, standard error of an estimate depends mainly on the variability in the population and design of sample. Pilot studies will help in providing the needed information for determining the sample size for large scale surveys.

iv. In sample surveys, the tools and methods of data collection may be different from those of the complete enumeration. In the latter, there may be no alternative to collecting data by sending a questionnaire to a headmaster or teacher, but to collect similar data in a sample survey one may be able to employ an investigator who can get the data from school records or through interview of the respondents. Even when this is not feasible, due to expenses involved, one can organise a better system for checking of data supplied by the respondents in a sample survey. One can also use more sophisticated tools of data collection e.g., tests, rating scales, etc. which may not be possible in complete enumeration. One has to think of the cost of data collection and the desired accuracy of information, and then use the best combination of the methods of collecting information.

v. Suitable measures are needed for tackling the problems of non-response, delays in getting information, and controlling other types of

errors. It is desirable to anticipate these problems in advance and plan suitable measures, instead of leaving them for sorting out when they arise.

vi. In the investigations in which educational institutions are the units and information is sought on institutional variables, it is relatively easier to organise sample surveys, following the pattern of (and even using the machinery for) collection (of annual educational statistics, some new problems are bound to be faced in organising other types of sample surveys, such as surveys in which parents or community members have to provide information. Surveys using mailed questionnaires, survey of households through investigators, surveys of activities of school leavers, etc. will throw up some challenging methodological problems which need to be tackled carefully. An organisation responsible for sample surveys in education need not restrict itself to surveys of educational institutions, but take up other types of surveys too, if they are appropriate for a given purpose.

Some Suggestions

Having discussed the need of sample surveys in education, and the problems that need to be tackled for their greater and more effective use in future, it is now appropriate to make some suggestions about what could be done to make sample surveys play a prominent role in the entire educational information system.

i. So far as routine statistics are concerned, an attempt should be made to identify the items on which data should be collected annually on complete enumeration basis ; those on which data should be collected once in 5 years or so again on complete enumeration basis ; and those on which data should be collected on a sample basis annually or once in 3 or 5 years. Perhaps a committee can be appointed to examine this issue, considering the data needs and feasibility of organising sample surveys.

ii. The role of different central agencies, such as the Statistics Unit of Ministry of Education, National Council of Educational Research and Training, National Institute of Educational Planning and Administration, University Grants Commission, Institute of Applied Manpower Research, etc., and state agencies such as State Institutes of Education, Statistical Units/Survey Units in the Department of Education, etc., may be defined both in organising sample surveys and providing assistance to others in conducting sample investigations,

iii. Some pilot sample surveys may be organised in selected States to provide educational data needed for planning but not available through the annual census. In fact, the Ministry of Education and NCERT have already taken up a project to conduct such a pilot study in four States. This should gradually cover other States too.

iv. Programmes of training may be organised to train staff in organisation of sample surveys. NCERT is making a beginning in this direction by organising a training course for the state level personnel shortly.

v. In the states where the number of institutions of a given type is large in number (say, over 1,000), there should be a systematic plan to collect even some routine educational data on a sample basis. For example, the data on age of students requires a lot of effort in collection and tabulation, and even then accuracy of information is very doubtful. It should be possible to collect age-data regularly from schools on a sample basis. The data on age are not needed for use at the school or block level ; it is enough to get some idea of age distribution of students at the district or even state level.

vi. It may be necessary to set up separate survey units in the States where such units do not exist, and provide them adequate, well trained staff to handle the planning and organisation of educational surveys.

vii. Manuals or handbooks may be prepared for the concerned staff at the State level to guide them in organisation of educational sample surveys. Also there should be arrangements for providing them consultancy in educational survey projects.

viii. Priority areas may be decided in the education sector itself, from the point of view of the need for data to help in definite policy formulation and preparation of suitable programmes for action. For example, the following are some areas in which one can visualise the need for data that can be met by organising educational surveys.

(a) *Universalisation of Education* : Surveys can help in collecting such data as areas and population still not covered by primary schools within reasonable distance ; out-of-school children and the social groups to which they belong; rate of retention in primary grades; unutilised capacity of existing schools ; community resources available for providing additional facilities for primary level education ; time spent by teachers in teaching and other activities ; quality of instruction ; factors responsible for poor enrolment or retention, etc.

(b) *Equality of Educational Opportunity* : Surveys may be conducted to study disparities in provision and utilisation of educational facilities in different regions and educational opportunities available to different

social and ethnic groups ; to girls; to members of Scheduled Castes and Scheduled Tribes ; to economically backward sections of society and to population inhabiting remote and hilly areas.

(c) *Vocationalisation of Education* : Surveys like area skill surveys may be conducted to determine the educational and training needs of a given area in the context of the environment, natural resources, socio-economic and cultural background of the people and the policies/programmes for the economic development of the region. Surveys and tracer studies for follow-up of school leavers can also provide useful data.

(d) *Non-formal Education* : Particularly, for the youth and adults, it is important to find their educational needs before suitable programmes can be formulated for their education. Surveys can help in assessing these needs and getting an idea of the type of programmes that would suit them.

(e) *Use of Educational Technology and Mass-media* : Surveys of existing institutions can provide information about the type of educational technology that would be most effective ; and for evaluating programmes using such technology and mass-media for education. Surveys can also help in assessing the problems and the extent of utilisation of existing equipment and instructional tools.

Conclusion

In conclusion, it may be mentioned that it is high time that a long term plan for developing educational information system on proper lines was developed and the role of sample surveys in the same was clearly spelled out. It is only in the field of education that sample surveys have not played the proper role of providing data for planning and policy making. No doubt, sample surveys have been conducted, say, for assessing the academic achievement of students or facilities in schools, but most of these either had limited objectives, or limited geographical coverage, and as such they have hardly influenced the educational policy at a high level. In many cases, the results of surveys served only an academic interest. The all-India educational surveys, of course, provided a lot of useful data for planning, but they were not sample surveys, and were organised rather on an *ad hoc* basis. In other sectors, such as agriculture and industry, sample survey methods have been regularly and effectively used for providing important data for planning. Estimation of acreage and yield under different crops is based on sample investigations carried out every year. On socio-economic and demographic variables, important data are collected regularly through the National

Sample Surveys. It is understood that in the population Census of 1981, certain data on fertility and migration are to be collected on a sample basis. For providing the vital statistics, the scheme of Sample Registration of Births and Deaths has been operating quite successfully since 1964-65. It is, therefore, not out of place to give due thought to the possibility of developing a plan for organising sample surveys on a regular basis to provide the much needed data on educational variables. This is all the more important in view of the limitations of existing system of educational statistics in providing the desired data.

It may also be stressed that when we talk of sample surveys in education, it is not just the surveys of educational institutions to provide routine data on the institutions' characteristics such as enrolments, teachers, buildings, etc. Of course, these are very important, but attention must be given to other kinds of surveys also which help in problem solving and are geared to specific objectives. Such surveys may not be repeated periodically. Even if repeated periodically, there can be scope for covering different items in different rounds.

In addition to the sample surveys of institutions, there should be population based sample surveys to provide data on attitudes, opinions, activities, etc. relating to education. In some of these, mailed questionnaires can be used ; in others, households may have to be sampled as in the N.S.S. Since it is difficult to organise a large scale sample survey of households, the N.S.S. machinery itself should be utilised for collecting more and more information on items relating to education.

Finally, to sum up, we again underline the need of different kinds of surveys in education, the need for a machinery for conducting these surveys at the State level, and the need for a policy and long term plan for such surveys in education. The educational administrators and planners should start perceiving the need for sample surveys and should provide necessary facilities for organisation of surveys and progressive use of survey data in decision making. They can think in terms of surveys, which provide data for (a) diagnostic or fact finding purposes, (b) checking and verification of data arising from the annual census of institutions, and (c) monitoring and evaluation of educational programmes.

It is hoped that the seminar would be able to deliberate on these issues and provide guidelines to all concerned about the use of sample surveys in education and what the different Central and State level agencies can do about it.

Role of Sample Surveys in Education

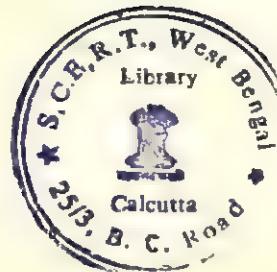
P.K. BOSE

Weaknesses of the System

It is an accepted fact that education on the broad lines is essential for economic and cultural development of the country, for national integration and for realising the ideal of socialistic pattern of society. This will involve a transformation of the system to relate it more closely to the life of the people, a continuous effort to expand educational opportunity, a sustained and intensive effort to raise the quality of education at all stages, an emphasis on the development of science and technology, and the cultivation of moral and social values. The educational system should produce young men and women of character and ability committed to national service and development. This is necessary if the country is to attain its rightful place in the comity of nations in conformity with its great cultural heritage and its enormous potentialities.

In spite of the substantial increase in enrolment as well as in the number of institutions, the educational system has developed quite a few weak spots. The most prominent among them are the following.

- i. Inordinate delay in the fulfilment of the constitutional directive of providing free and compulsory education to the age-group 6-14 in terms of Article 45.
- ii. The widening inter-state/inter-regional disparities in the availability of educational facilities.
- iii. The inability of the socially disadvantaged groups to avail themselves of the educational facilities.
- iv. The inability of the programmes of non-formal education to make much headway.
- v. Continuous decline in educational standards.
- vi. Failure of the educational system to prepare the students for productive jobs as evidenced from an increasing body of educated unemployed and unemployables.



Role of Sample Surveys in Education

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Need for Basic Information

To revamp and restructure the present system of education to meet the emergent needs of socio-economic transformation for development, it is imperative that educational plan is based on objective assessment of the present position for which we require a strong data base. The weaknesses and strength of the statistical information system in education have been discussed threadbare in the preceding paper. The data base contemplated there relates to broad-based primary statistical series. Some meaningful indicators of qualitative and quantitative parameters essential for formulating plans for educational development on scientific lines will have to be developed.

An operational educational plan must deal with a wide range of statistics. Statistics required for formulating such a plan vary in accordance with the stage of economic development of the country concerned. Statistical data required for formulating, implementing and evaluating a plan may be classified in the following catagories.

(a) *Primary Statistical Series* : These range from enrolment, attendance, number of teachers, their qualifications, nature of school buildings, etc.

(b) *Secondary or Derived Statistical Series* : These are derived or compiled from primary data and consist of such statistics as unit cost of education, index of educational advancement, attrition rates of teachers, etc.

(c) *Statistical Parameters* : These can be obtained from primary or secondary statistical series and are based on specific hypotheses concerning structural relationship between different series. For example, a functional relationship between education and employment may be ascertained.

At present the State Education Departments remain the main suppliers of statistical data for the Ministry of Education, the Planning Commission and other central agencies. It is through the States' departmental machinery that educational statistics are collected from institutions on a census basis. Basic information consists of data from institutions, enrolment, teaching personnel, and expenditure. Apart from these, publications provide information on the changes that have taken place over the years and also some qualitative indices relating to teachers and students. Even this limited data cannot meet three basic requirements namely, timeliness, coverage and reliability. Apart from the State Governments and the Ministry of Education, Government of India, a number of agencies like the University Grants Commission, Education Division of Planning Commission, National Council of Educational

Research and Training, National Sample Survey Organisation, etc. collect statistical information of primary nature. Unfortunately, the quality of data is equally poor.

There is need for providing relevant, accurate and timely statistics to educational planners and administrators in the country at various levels of decision making. Above discussion shows that there is something wrong with the entire educational information system which is manifested in the form of excessive time lag, inaccuracies in data and poor coverage of items on which data are needed for planning and administration purposes.

Information Systems for Planning

On the practical side of the techniques for planning there is a contribution to 'information systems.' As the nature of planning changes and becomes more and more complicated, the importance of efficient and wide ranging information systems become evident. At present the Planning Commission is stressing on microlevel planning, so an urgent need has arisen for reliable block level data.

The Expert Committee on Educational Statistics set up by the Planning Commission observed :

"The existing arrangements for the collection, compilation and publication of educational statistics are unsatisfactory. The delays that occur render most of the statistics practically useless for planning purposes ; the statistics that are collected do not provide sufficient information which can be used for formulating realistic educational programmes for implementation ; a meaningful analysis of even the information that is collected is seldom undertaken and the way these are compiled leads to a large margin of error in educational Statistics."

Suggestions given by the expert committee contain the basic elements of the information system, the first refers to the coverage of the data and the second about the methods which should be adopted for the collection and compilation of data so that the margin of error is minimum. I may mention here a few areas where basic statistics are not available although they are essential for achieving the objectives of our plan.

We do not have sufficient data on student wastage. Both the rate of loss and the causes behind it deserve more detailed study. The priorities in the next plan will be the removal of illiteracy, universalisation of elementary education, and making education more employment-oriented and relevant to society. For this purpose we need more depth studies on Wastage and Stagnation.

Another area where there is frequent lack of sufficient information is that of the costs of different programmes and activities. There is some difficulty in getting at these costs because of the problem involved in breaking them down in the necessary detail.

Library is another topic on which practically there is no information. Reliable figures on the number of titles in the libraries are rare. Again there are no measurement of the services of libraries. A great deal of use may be made of materials which never leave the premises and lack of measurement, knowledge and information about these facts may lead to inefficient use of resources.

Of late, there are some discussions on the improvement of quality of education by the experts. Unit costs are rising for reasons beyond the control of educational administrators, but if the quality is also to improve then some strategy must be found to earmark a certain portion of future budgetary increments specifically for certain measures designed for this purpose.

The widely held assumption that higher teacher salaries will improve classroom quality is highly debatable. What is less debatable, however, is that teachers without good books, without other good aids to teaching and learning are considerably less productive, whatever their qualification and salary may be, than teachers with more of these important aids to work with. The cost of a reasonable supply of such tools is small in comparison with that of a moderate improvement in the pupil/teacher ratio, or a moderate general increase in teacher salaries. The same holds true for an investment in the right kind of in-service training for teachers, designed not simply to give the teachers a new credential to boost their salary scale but to give them the competence to teach new curriculum content and to use new teaching aids and methods effectively. India will be facing increasingly pressing financial strain in meeting these enormous and urgent needs in education. Planners have to take into greater account the economic aspects involved in their plans and explore every means of improving the efficiency of the educational system so as to get the best value from existing resources. An indispensable technique for this purpose is analysis of the cost of education. Existing data on micro-cost components are meagre and unreliable.

The employment market information acts as a barometer of the demand of manpower. Under this category, surpluses and shortages of manpower, rates of unemployment and under employment, waiting period and internal migration and brain drain are some of the crucial items of information required for efficient and effective manpower planning.

Information on the current stock of various categories of manpower

is hardly available. It is necessary that the stocks for all the important categories of manpower in terms of education/training, industries, occupations and areas, are worked out at regular intervals by applying a standard methodology. Information about the rates of attrition in these stocks should also be made available so that they could be updated without great difficulty.

I have mentioned only a few areas where information is lacking. There are more areas which are equally important and on which data are not available.

Methods for Collection

Financial resource is very limited in our country and it is more so in the field of education. Per capita expenditure on education was Rs. 3.2 in 1950-51 and it rose to Rs. 14.6 in 1967-78, and it has slightly increased in 1978. The expenditure on education uses only 3 per cent of the National Income, approximately. In such a situation the strategy which should be followed for the collection of data may be stated as the following.

(i) *Census method*—It should be used for the annual collection of minimum data, like class-wise and sex-wise distribution of enrolment, trained and untrained teachers, educational expenditure on specific items, number and type of institutions.

(ii) *Sample Survey method*—It should be used extensively for periodical theme-oriented studies. The present gaps in our educational statistics should be filled up by collecting data on a sample basis. Studies will include periodical theme-oriented studies. I have mentioned some gaps which may be filled up by the method of sample survey.

It may not be out of place to say a few words about the main advantages of sampling as compared with complete enumeration.

(a) *Reduced Cost* : If data are collected from only a small fraction of the aggregate, expenditure may be expected to be smaller than a complete census.

(b) *Greater Speed* : Data can be collected and summarised more quickly with a sample than with a complete count.

(c) *Greater Scope* : Surveys which rely on sampling have more scope and flexibility as to the types of information that can be obtained.

(d) *Greater Accuracy* : Because it is possible to man the survey with persons of better quality and they can be given intensive training, a sample may actually produce more accurate results than the kind of complete enumeration that is not feasible to take.

The planning of sample survey has several aspects : (1) Zoning and/or stratification; (2) Size of the sample unit ; (3) arrangements for replication ; (4) distribution of sample units in each strata; (5) preparation of forms and schedules ; (6) structure and organisation of the field staff, and (7) arrangements for the statistical processing of the materials, etc.

When absolutely no information is available and yet the survey has to be completed at one single operation, there is no alternative but to use unrestricted random sampling without zoning or with such zoning or stratification as may be considered conventional from a purely organisational point of view.

Fortunately, some information is always available. Also especially in large-scale work, the survey has often to be continued from year to year or at suitable intervals. It is, therefore, usually possible to adopt exploratory method in which a sample survey is first carried out on a very small scale with the primary object of collecting basic information required for preparing an efficient design for later surveys.

Concluding Observations

The information system is indeed a key element in planning, if for no other reason than that it influences and reflects the levels at which planning takes place. The information system must be organised to provide for those who have the power vested in them to make decisions. It can help to improve the quality of decision making by improving the quality or increasing the quantity of data on which a decision is based. What is also necessary, however, is a means of collecting data which corresponds to the needs of the system. Unfortunately, planning of higher education is usually linear and additive, and one of the reasons for this is the way in which data are collected. University personnel, and in particular, the academics find it difficult to think in the three dimensional terms of the systems, and yet, if decision makers are to see the consequences of their decisions clearly, there must be a system analysis approach to the collection of data.

Sample Survey Methods in Education

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The educational problems can be broadly classified into the following categories :

- i. The problem of the institutions; and
- ii. the problem of the individuals (students and teachers).

The problems of educational institutions may comprise of management, finance, building and accommodation, furniture and equipment, etc., while that of individual students and teachers may be more related to the socio-economic factors. There are institutions of varying standard in the country and their problems also correspondingly differ from institution to institution. There may be institutions which will be wholly financed and regulated by the State; there will be institutions which might be receiving aid from the State, but managed by private management committees; there may be institutions which might be completely private and fully financed by private agencies; location of the institution also introduces considerable variation. An institution located in rural area may not be starving of land requirement but it might be suffering for the lack of building and necessary teaching equipment, instruments and financial resources. The institution located in the city might be having better facilities of acquiring equipment, while there may be a lot of problems in getting land on reasonable price. All these factors introduce considerable change in the environment and, thereby, in the educational standard. Similarly, the individual students and teachers have their own socio-economic problems which, to a large extent, depend upon the location, management and financial resources of the institution. These problems differ from student to student and from teacher to teacher.

*Printed from *Educational Statistics in the Asian Region*, Seminar Report of AIEPA (1970) pp. 279-304.

The plan which envisages to improve the existing conditions of the institutions and individuals for imparting better type of education will necessarily need the basic information on the structure of the institutions and the socio-economic conditions of the teachers and the students. Such information will have to be collected from individual institutions. Unfortunately, under the existing set-up there are few institutions which maintain a complete record which might supply the necessary data to the planners and the decision makers. In the absence of such complete records, it is not possible to collect systematic information from various institutions which might be useful for detailed analysis. Any effort to obtain such information from all the institutions will need extensive resources, particularly for a country of the size of India. Moreover, it may not be even necessary to collect such data from all the institutions. Sample survey methods developed recently for collection of data in other fields can fruitfully be applied for obtaining such information.

Sample survey methods have two aspects. Selection process—the rules and operations by which some members of the population (in this case some institutions or individuals) are included in the sample, and an estimation process (or estimators) for computing the sample statistics, which are sample estimates of population values. The overall design of surveys includes other important aspects that can be called jointly the survey objectives.

- (a) The definition of the survey variables should specify the nature of the characteristic, the rules of classification categories and the units for expressing them. It also specifies the extent and content of the survey population.
- (b) The methods of observations (measurement), including both data collecting and data processing, give operational meaning to certain variables and determine the nature of the survey data.
- (c) The methods of analysis, statistical and substantive, reduce the survey data to results that can be comprehended and utilized.
- (d) The utilization of survey results may sometimes take the form of specified decisions based on the survey results and other relevant information. More frequently the results become part of the public fund of knowledge and the investigator has only vague understanding of the future use of his results.
- (e) The desired precision of survey result may be clearly stated for sample design for specified statistical decision. More often, the survey aims are many and vaguely stated. Yet the investigator

can find some broad limits of desired precision. Commonly, instead of specifying precision, the investigator must work from a reasonable allowed expenditure and adjust accordingly the aims and the scope of the survey. This occurs in the design of survey with many objectives, none of which is of predominant importance.

The survey objectives should determine the sample design. But the determination is actually a two-way process, because the problems of sample design often influence and change the survey objective. We shall encounter examples of the ways in which the survey objectives and sample design interact to produce overall survey design. A dialogue between the researcher and the sampler must occur before any aspect of the survey design is frozen, because a change in one aspect may dictate a change in others. The dialogue may occur silently, if the researcher and sampler are the same person, but the dialogue should nevertheless take place.

In the sample surveys for obtaining information pertaining to education, the sampler has to have a dialogue with the educationist who is interested in obtaining such information. For example, only through the conversation and dialogue with an educationist it will be known as to what is needed. Sample design will very much depend on types of data that are needed. If the study relates to the conduct of survey investigation pertaining to the primary education, the primary institutions will constitute the population and the rest of the institutions which are not concerned with primary education shall be excluded from such study. Again, if such data are needed only for the primary institutions aided by the State, the population will constitute of only such primary institutions. Likewise, one can classify the population which is to be studied. The dialogue will further help in formulating the questionnaire. The questionnaire will naturally depend upon the type of data that are needed.

Once the objective has been determined and the type of data that will be needed to study that objective has been decided, the sampler can prepare the sampling design and select the sample. The first need of a sampler will be a well-defined list of sampling units which constitute the population. In this case it may be the list of the institutions which are to be covered by the sample survey. In practice, such list will not be readily available. The sampler has to devise ways to determine such list. In the absence of such complete list, the sampler takes the fullest advantage of what is already known about the population. The efficiency of a sample design to a large extent depends upon what is

already known about the population that is to be studied. The various sampling designs like stratified random sampling, cluster sampling, pps sampling, etc., are dependent on the additional information which is available with the sampler before he finalises the sampling design.

Selection of the sample is one of the most important aspects of sample survey design. It is only the random method of selection of the units from the population that provides the data which will be subject to analysis and interpretation based on modern statistical techniques. Data based on only random sampling can be utilised for the purpose of prediction. If the sample is non-random, no statistical operation can be done of such data and no prediction be made. Therefore, when we talk of sample survey methods, all the time we mean sample survey methods based on random sampling.

A sample survey aims at estimating specified population value. A population value is a numerical expression that summarises the value of some characteristics. For all N-elements of entire population, it is a summary measure of some features of the distribution of the variable in the defined population. For example, the character may be the student-teacher ratio in primary schools in a given area. Now, if the population value of student-teacher ratio is to be determined on the basis of a sample, only a random sample can provide such an estimate whose reliability can be predicted. The sample value or statistics is an estimate computed from the random units in the sample. An impor-

tant example is the mean of the sample units $\sum_i^n y_i/n$ where y_i is the observed value of the i th unit in the sample. It is a variate or random variable that depends on the sample design and on the particular combination of units which happen to be selected. Hence the particular estimate is only one among the many possible estimates which could have been obtained by the same sample design. On the contrary, the population value depends on all N-values in the population. This is a constant, independent of the vagaries of selection, although its value is usually unknown. Thus, any statistics calculated from the sample will differ from the corresponding population value. This difference is usually defined in the statistical literature as sampling errors. This arises because only part of the total population is designated for observation in the sample. Fortunately, it is possible to predict the sampling errors if the samples have been drawn randomly.

There is another type of error which very often occurs. This error is usually known as a non-sampling error. Non-sampling errors arise due to a large number of reasons (refer to Deming's book on Sampling

Technique). The non-sampling errors occur because the procedure of selection or procedure of taking observations are imperfect. The contribution of the sampling errors and non-sampling errors to the total error of the survey should be considered jointly with the sample design.

In educational problems, where the character can be easily quantified and measurement can be easily done, the fear of non-sampling error may not be there, although sampling error will exist but it can be measured.

The measurement of socio-economic characters is not so easy. For example, to study the income and expenditure pattern of the teacher community, one will need detailed data on the total income and the total expenditure on various items. It is difficult to obtain reliable data on such items. Similarly, to study the opinion of the teachers and students to a new system of education only subjective data can be collected which will be subject to high non-sampling error. It is, therefore, essential to conduct pilot investigations for developing suitable measurement techniques for obtaining reliable data on socio-economic characters.

In most of the educational surveys, among the various sampling designs, cluster method of sampling is most convenient. For example, let us suppose that living conditions of teachers is to be obtained through sample surveys. A list of the teachers to be covered should be prepared and sample drawn. It will not be so easy to prepare the list of the teachers, but comparatively it will be easier to prepare the list of the institutions. A sample of the institutions may be taken and all the teachers serving in these sampling institutions may be covered by the enquiry. This method will correspond to the cluster sampling method. This method may be very efficient also because there will be considerable variation in the living conditions from teacher to teacher even within a school. Similary, if certain characteristics of the students are to be studied, one can use cluster method of sampling with advantage by sampling a few institutions and then covering all the students of those institutions. One can sometimes also follow multi-stage sampling design. For example, suppose one wants to know the reading habits of the students in an area through sample survey. Instead of selecting students directly from the list of students of all the schools of the area, one can select some schools at random from the list of schools in the area, and then from the selected schools one can select at random some students and obtain their opinion. Similar sample design can be used for collecting even psychometric and socio-economic data.

The various sampling methods developed for collection of data in other fields can easily be applied for collection of data on items relating to education. The sampler should, however, be familiar with the educational system and the various institutions which are operating under that system. He should also be familiar with the type of variation that exists from institution to institution and from individual to individual. The knowledge of variation of the character under study considerably helps in evolving appropriate sampling design and measurement technique. Such knowledge is also useful for working out the details of the cost as also the number and type of staff that should be recruited for conducting such surveys. Sampling method, no doubt, has been very considerably applied for collection of data in agriculture as well as in studying the characteristics of the human population, its application in the field of education has been limited. It is presumed that in future, with the increasing unemployment among the educated people, there will be need of a systematic planning of education so that the unemployment among the educated people becomes minimum. The growth of education in India as well as in many developing countries has been rather haphazard. An educational system within a well defined objective will need a well thought out planning. For any such objective and scientific planning, detailed data on various aspects of education will have to be collected normally through the sample survey techniques. In designing such sample surveys, no doubt, the educationist will play the key role, but the advice of sampling expert will prove very valuable.

All-India Educational Surveys

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Ever since India attained independence, a lot of importance has been given to quantitative expansion and qualitative improvement in education at all levels. With the adoption of the Constitution in 1951, there was a sudden spurt in elementary education towards fulfilment of Article 45 of the Constitution which enshrined Free and Compulsory Education for all children up to the age of 14. Towards this end, the States vied with one another in opening new schools, particularly in the rural areas, upgrading the existing schools, opening teacher-training institutions to provide professionally competent teachers, providing various incentive schemes such as mid-day meals, free textbooks, free clothing and attendance scholarships to weaker sections of the society, and to girls to bring them to schools and retain them in schools. Further, to enable all children to possess textbooks, the textbooks were nationalised and provided to children at low prices, either on no-profit no-loss basis, or on minimal profit basis. All these schemes were either initiated by the Centre, or had its active support. Side by side, the government at the Centre began assessing periodically the target of fulfilling the Directive Principle of Free and Compulsory Education. This culminated in initiating all-India educational surveys to find out the availability of educational facilities with major emphasis on rural areas, enrolment, and teachers, etc. While the First All-India Educational Survey was organised by the Ministry of Education and Social Welfare in 1957, the subsequent three surveys, Second All-India Educational Survey (1965), Third All-India Educational Survey (1973), and the Fourth All-India Educational Survey (1978), were all conducted by the National Council of Educational Research and Training. While the First, Second and Fourth All-India Educational Surveys were confined only to school education (recognised schools), the objectives of the Third All-India Educational Survey were extended to cover all areas of education, right from the pre-primary through university, both recognised and unrecognised institu-

tions, technical and vocational education and educational administration and inspection. Thus, this was the most comprehensive survey of its kind and consequently there were other collaborating agencies like the University Grants Commission (for higher education), Institute of Applied Manpower Research (for technical and vocational education, not leading to a degree), and National Institute for Educational Planning and Administration (for educational administration and inspection). However, the major part of the third survey involving school education and allied areas was undertaken by the National Council of Educational Research and Training.

All the four surveys were conducted on a complete enumeration basis. The basic objective viz., to identify the rural habitations with and without schooling facilities at different levels of education, broadly remained the same in all the four surveys. But this objective was widened from one survey to another in order to identify various aspects of school education to enable educational planners and administrators to identify specific areas needing support, to fix priorities and to take decisions. Widened objectives resulted either in wider content coverage in the schedules to be canvassed, or canvassing separate schedules on each aspect or phasing out the survey to fulfil these objectives. In the first, second, and fourth surveys, the entire processing was done manually and in the third survey, due to its vastness, both manual and computer processing was resorted to. The manual processing in the States was done at three levels viz., block, district and State levels, and the state tables were finally compiled at the national level. Each of these surveys has provided data which were useful to educational planners, administrators, research workers and others interested in the development of education. The objectives and the achievements of the four all-India educational surveys are briefly described below.

First All-India Educational Survey (Date of Reference 31.3.1957)

The objectives of this survey were :

- a. Identification and enumeration of every distinct habitation and elementary school.
- b. Mapping out the location of schools.
- c. Delimiting the area served by the existing schools.
- d. Deciding on the location of new schools and the area served by the proposed school by suitable classification and grouping of habitations.
- e. Preparation of district-wise statistical tables showing the result of the survey.

Data regarding the number of local and non-local pupils in schools, the number of teachers, the accommodation in the existing schools were also collected. While the survey was essentially for the rural areas, to make the picture as complete as possible, the information about number of schools and pupils in urban areas was also collected. In all, three schedules were canvassed to collect data in the survey.

This survey was completed in 1959. The main feature of this survey was the delimitation of school areas for the then existing schools and the planning of school areas for proposed schools according to separate sets of criteria adopted for the three stages of school education in terms of mainly population and distance.

However, this survey could not cover West Bengal, since the State had just completed an educational survey, although not on the same lines, and hence pleaded its inability to participate in this survey. Also pockets of the areas under colonial powers like Goa, Daman and Diu, and Pondicherry, and geographically inaccessible areas like A & N Islands, NEFA, Nagaland, L. M. & A. Islands, and Lahaul and Spiti regions of erstwhile Punjab were also excluded.

Second All-India Educational Survey (Date of Reference 31.12.1965)

This survey was conducted to meet a number of demands of the States and some other agencies. Apart from up-dating the data of the First Educational Survey, which was conducted more than 8 years earlier, this survey was needed since lots of changes had taken place during the intervening period and fresh data were required for the preparation of District Development Plans for education. It was also decided that certain types of institutions be taken up for intensive study regarding the existing conditions to provide base-line data for the evaluation purposes.

The objectives of this survey relating to school education were the following.

- a. Identification of every distinct habitation that was enumerated in the First Survey and enumeration of (i) every primary, middle and secondary school ; (ii) habitations which have in them provision for educational facilities in all the three school stages.
- b. Studying the distances at which these educational facilities for various school stages are available for habitations without educational facilities in them, etc. Data were also collected for size of sections at school stages, problem of disproportionate size, incomplete sections at school stages, multiple class teaching, management-wise position of schools, single teacher schools,

teachers according to their qualifications, both academic and professional and qualification of teachers teaching science.

In this survey five schedules were canvassed in all, one village information form, two school information forms (one for primary and middle, and another for middle and secondary) for rural areas, and two similar school information forms for urban areas.

This survey covered all the States and Union Territories except Lahaul and Spiti in the erstwhile Punjab, and Mizo Hills of Assam. Majority of the States developed District Development Plans for education based on the data of this survey for opening new schools and upgrading the existing schools.

Under the second phase of this survey, institutions like junior technical schools, colleges and institutes of physical education, institutions for the physically handicapped : (i) blind, (ii) deaf, mute and dumb; higher secondary and multipurpose schools offering (i) Agriculture, (ii) Technical education offered under elective/optional stream/subjects, were studied. In addition, intensive study of four blocks in four different states was also conducted as a part of Phase II.

Third All-India Educational Survey (Date of Reference 31.12.1973)

The Advisory Committee for the Second All-India Educational Survey had recommended that an all-India Educational Survey should be conducted five years apiece so that the data of these surveys are available to the educational planners in time for formulation of policies and for fixing priorities at the beginning of each Five Year Plan. However, due to unavoidable reasons this survey could not be launched before late 1973. By far this was the most ambitious and comprehensive survey of its kind which covered all aspects of education and at all levels. This necessitated identifying agencies with relevant expertise and competence to undertake and complete the survey in the areas of their interest. The co-ordination of the survey work of different agencies was the responsibility of the National Council of Educational Research and Training.

Apart from the survey of school education, which covered both recognised and unrecognised schools, other areas covered in this category were pre-primary schools, teacher training institutions at pre-primary, elementary and secondary levels, teacher-educators in the last two cases, other schools like Sanskrit Pathashalas, Persian and Arabic schools (*Makhtabs* and *Madrasas*), education outside schools (non-formal education), coaching institutions, colleges and institutes of physical education, institutions for the physically handicapped (blind, deaf, mute and dumb,

orthopaedically handicapped), detailed information about headmasters and teachers in schools, hostel facilities for the Scheduled Castes and Scheduled Tribes. For all these separate schedules were canvassed. An attempt was also made to collect information about Educational Finance at the state level, school finance from private schools and examination results right at the district level for all external examinations, but in these cases the quality of the data was not found to be satisfactory and hence no attempt was made to report them.

The specific objectives of this survey under school education were the following.

- a. To update the data of the earlier surveys in terms of the distribution and size of habitations and delimitations of school areas of existing primary, middle and secondary schools and to collect data needed for developing district development plans.
- b. To study intensively the existing facilities on certain significant variables such as library, laboratories, audio-visual aids, attrition rates and other qualitative aspects of school education.

Towards this end, comprehensive questionnaires were prepared, covering details on school campus including buildings, playgrounds, expansion potential library with number of books, the personnel manning them and their professional competence, subject-wise laboratories, book banks, various incentive schemes and the number of beneficiaries of these schemes, etc. This survey gave much importance to collection of information about weaker sections of the society and the educational facilities available in the habitations predominantly populated by the Scheduled Castes and Scheduled Tribes. In all twenty-six schedules were canvassed in the area of school education and allied areas. The data were processed both manually and on computer. From this 19 reports, including eight theme-oriented reports, which relate to school education and allied areas, were prepared. Similarly, other agencies involved in this survey have brought out separate reports in their respective areas.

Being the most comprehensive survey of its kind where 26 schedules were canvassed on various aspects of school education and related areas, the survey could be completed only towards the end of 1977. But the finalised data on school education relevant for planning purposes was submitted to the Ministry of Education in October 1976. The statistics on school buildings, library and laboratory were the only source of data on these items for the Seventh Finance Commission. As there was a considerable gap between reference date of this survey and its completion, the work of preparing district development plans for education could not

be pursued in all the states, though some states did use the survey data for district level educational planning.

Fourth All-India Educational Survey (Date of Reference 30.9.1978)

The need for the Fourth All-India Educational Survey arose due to the greater stress laid on universalisation of elementary education to be achieved in a span of five to seven years from 1978, and the concept of rolling plan mooted at the time which envisaged annual review of the performance, and shift in priorities on the basis of such review. Though the Third All-India Educational Survey had been recently concluded, which provided a wealth of information that had still to be fully utilised, more than four years had lapsed since the information had been collected and lot of changes had taken place during this period. It was, therefore, decided to collect information only on a limited number of items and only some crucial aspects of school education confining to recognised schools in the Fourth Survey. Thus the Fourth All-India Educational Survey was undertaken with the following objectives :

- i. To assess the present position of the provision of educational facilities at various stages of school education in respect of coverage of school going population, the distance to be covered by a child in order to have access to the school, enrolment of children belonging to weaker sections of the society, girls' enrolment etc.;
- ii. to assess the availability of minimum basic facilities in the school such as building, furniture, library, equipment, health and sanitation and incentives ;
- iii. to prepare block maps with existing schooling facilities and to identify clusters of habitations where institutions ought to be opened or existing schools ought to be upgraded ; and
- iv. to prepare ground for conducting quarterly monitoring of information relating to enrolment and other educational facilities provided in institutions at block level, annually.

Apart from collecting information similar to earlier surveys, detailed information about the educational facilities in the habitations predominantly inhabited by the weaker sections of the society, the number of teachers belonging to these communities working in schools, have been collected in this survey. In this survey only two schedules were canvassed viz., (i) Village Information Blank, and (ii) School Information Blank. This survey has since been completed and the main

report is ready for publication. Data on some important items have already been published. Also the States and Centre have utilised the data of the Fourth All-India Educational Survey in formulating the Sixth Five Year Plan.

The work on the fourth objective viz., quarterly monitoring of attendance is continuing and this is the responsibility of the National Informatics Centre, Electronics Commission.

As a follow-up of this survey it is proposed to take up the work of preparing district development plans for education in each State. This has already been done for Himachal Pradesh and similar work is likely to be taken up in other States soon.

Methodology for organising the surveys

All the four educational surveys were centrally sponsored schemes and consequently financed cent per cent by the Centre. For this purpose a separate survey unit (Central Survey Unit) was established in the Ministry of Education for organising the First Survey in 1957. The subsequent surveys were carried out by the erstwhile Educational Survey Unit (Second Survey, 1965) and later by the Educational Survey and Data Processing Unit (Third and Fourth Surveys) in the National Council of Educational Research and Training. In the States, separate State Survey Units were established for this purpose and at district levels, District Survey Units. Lower down at the Block level, the Block Education Officers were responsible for collection of data and collation. At the national level, the survey units had the benefit of advice and guidance of an Advisory Committee comprising representatives of the Ministry of Education, Planning Commission and some representatives from states of the rank of Directors of Public Instruction/Education, and NCERT.

Role of Central Survey Unit/Survey and Data Processing Unit

At the national level this unit drafted the relevant schedules for collection of necessary information, developing necessary guidelines for the concerned officers at the State, district and block levels who were responsible for conducting the survey and also various tables at different levels for analysing the data. These were placed before the National Advisory Committee for consideration and approval. After this, a national seminar of representatives of States who were responsible for organising the Survey in their respective States was organised at a central place. This was generally of around 10 days duration, either in one session or more. In this seminar the Central Survey Unit would explain all aspects of

the survey including discussion of tables. After this, the States were supplied with the copies of guidelines and the block and district tables in printed form, and the State tables in duplicate form. Later, the staff at the centre visited all the States and Union Territories to train the district level officers in similar seminars of about a week's duration and subsequently visited the states in removing their difficulties in tabulation procedures and finalising their State tables.

Finally, at the national level, the State tables were consolidated and national tables along with reports were prepared and published.

State Level : At the State level, there was a separate survey unit established for the purpose. The staff for the survey were usually drawn from the Directorate of Education and was generally for a period of one year, or till the completion of the survey, including preparation of report, whichever was earlier. At this level, usually a State Survey Officer, of the rank of Deputy Director, supported by one Assistant State Survey Officer for every 10 revenue districts or part thereof, two Statistical Assistants and two administrative staff to assist them was provided. All this staff was on a full time basis for a period of one year.

The responsibility of the State Survey Unit was to get the schedules translated into regional languages and get them printed, supply them in sufficient numbers to the District Survey Officers and guide them in their work in the preparation of district tables and district reports. Further, it was the responsibility of the State Survey Unit to consolidate the State tables and prepare the report and supply the finalised state tables to the centre.

District Level : The District Survey Officer was the lone officer in charge of the survey in every revenue district, and he was to work in close collaboration with the District Education Officer to execute the survey in the district. He had to organise the training programme for the Block Education Officers who had to finally implement the programme. He had to guide the Block Education Officers in the process of scrutiny of the canvassed schedules and in the preparation of block tables. He had the responsibility of consolidating the data at the district level on the basis of the block tables received by him from different blocks in his district and prepare a report. The district tables were to be passed on to the State Survey Unit for further consolidation. The duration of the district survey unit was for a period of six months and he was a full time officer.

Some Findings of the Survey : The major findings of the survey about the schooling facilities have been given below.

Hitherto four all-India educational surveys have been conducted on a census basis to identify the rural habitations with and without educational facilities, and the distance which children have to walk in order to

have access to the school. The Fourth All-India Educational Survey has revealed that about 92.82% of the rural population has primary education facility either in their own habitations or up to a distance of 1 km. The remaining 7.18 per cent population are living in smaller habitations with less than 300 population. Consequently, if schools are opened in these habitations they may not be economically viable. There are various aspects in the area of school education which need periodical surveys to assess the real position to fix priorities. It is time we took a second look at the All-India Educational Surveys that are being conducted and whether they should be continued at the enormous cost and time, or whether one could turn to alternative periodical surveys.

*See Tables on pages 41, 42.

Some Major Findings of the Four All-India Educational Surveys

Item	First Survey	Second Survey	Third Survey	Fourth Survey
Date of references	31. 3. 1957	31. 12. 1965	31. 12. 1973	30. 9. 1978
1. Number of rural habitations	8,40,033	9,82,251	9,53,734	9,64,664
2. Population of rural habitations (As on i. 11. 1956)	29,50,04,271	39,65,80,125	46,53,67,369	50,91,63,428
Primary Education				
3. Number of rural habitations served by primary sections in them	2,29,023	3,73,086	4,22,766	4,51,455
4. Percentage of these habitations to the total	27.26	37.98	44.33	46.80
5. Populations of habitations with primary sections in them	16,70,44,295	28,34,81,088	35,42,23,069	39,98,37,686
6. Percentage of population served by primary sections in them	59.75	71.48	76.12	78.53
7. Rural habitations with primary sections up to a distance of $\frac{1}{2}$ mile	1,75,055	3,00,557	1,11,158 ($\frac{1}{2}$ km)	1,41,520 ($\frac{1}{2}$ km)
8. Percentage of population of habitations served by primary sections up to a distance of $\frac{1}{2}$ mile	14.63	14.85	5.74	6.60
9. Rural habitations with primary sections between 0.6 to 1 mile	1,77,221	1,83,173	(0.6 km to 1 km) 1,86,585	(0.6 km to 1 km) 1,81,022
10. Percentage of population of habitations served by primary sections between 0.6 to 1.0 mile	21.07	8.83	(0.6 km to 1 km) 8.48	(0.6 km to 1 km) 7.69

<i>Item</i>	<i>First Survey</i>	<i>Second Survey</i>	<i>Third Survey</i>	<i>Fourth Survey</i>
Education at Middle Stage				
1. Number of habitations with middle sections in them	26,267	69,424	80,837	1,03,601
2. Percentage of habitations served by middle sections in them	2.13	7.07	8.69	33.47
3. Number of habitations served by middle sections not in them but up to a distance of 3 miles	3,96,542	6,43,470	4,61,389 (upto 3 kms)	5,41,370 (upto 3 kms)
4. Percentage of habitations served by middle sections not in them but up to a distance of 3 miles	47.21	65.51	49.57 (3 kms)	45.46 (3 kms)
Education at Secondary Stage				
1. Number of habitations with secondary sections in them	4,500	16,231	24,049	29,563
2. Percentage of habitations with secondary sections in them	0.54	1.65	2.85	3.06
3. Number of habitations served by secondary sections not in them but up to a distance of 5 miles	2,97,055	5,84,923	4,32,116 (5 kms)	6,99,804 (8 kms)
4. Percentage of habitations served by secondary sections not in them but up to a distance of 5 miles	35.90	59.55	51.80 (5 kms)	72.54 (8 kms)

Areas in the Field of Education in which Sample Surveys are Needed

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An attempt has been made here to identify items on which information may be collected through sample surveys. In order to appreciate the list of such items, it is felt necessary to briefly describe the data needs and gaps in the available information, and the present system of collection of educational statistics, and these have been discussed in Sections I and II respectively. Section III of this paper deals with the main subject matter of this paper.

Data Needs and Deficiencies in the available Information

Educational statistics are needed for (i) educational planning, (ii) management of the educational system, (iii) educational research, and (iv) for dissemination of information to general public, legislators, other departments and international organisations. For educational planning, for instance, information is required on : (i) institutions—by level and type in different regions ; (ii) teachers—by sex, age, qualifications, field of specialisation ; experience ; full time/part-time, attrition rate ; (iii) non-teaching staff-inspectors, other administrators ; clerical staff, etc. ; (iv) classes—number of classes by grade and size ; (v) students—by sex, age, grade, new admissions, repeaters, students by branch of study (at secondary and higher levels) ; region-wise distribution, average daily attendance ; stock and flow statistics ; examination results ; (vi) school buildings and equipment—type of construction ; size ; special rooms for laboratory, etc. ; (vii) other facilities—hostel ; health services ; mid-day-meals, school transportation services ; (viii) scholarships, fees, etc. ; (ix) data on non-formal education—facilities by type and organisation ; students availing the facilities by sex, age, etc. ; and (x) costs of education recurring and capital, private expenditure on education.

From the viewpoint of above mentioned requirements the available information is found to be deficient particularly in regard to educational wastage, facilities for extra-curricular games, sports, etc., socio-economic and cultural background of the students, non-formal education, flow of students in the school system, average daily attendance, unit cost of providing education, attrition rate of teachers and education imparted in unrecognised institutions.

Present System of Collection of Educational Statistics

The system of collection of educational statistics has recently been streamlined by the Ministry of Education. According to the new system, information on essential items is being collected annually with effect from 1976-77 on census basis. These items include number of institutions by management, enrolment by sex, number of teachers (trained and untrained), income to the institution by source, and expenditure incurred by items of expenditure, and examination results (number appeared and number passed). Information on the number of departments/classes attached to the institutions and enrolment therein; enrolment by age and courses/levels; and number of beneficiaries and amount awarded in respect of scholarships, stipends and other financial assistance by sources for all communities and for Scheduled Castes and Scheduled Tribes, will be collected quinquennially, starting from the year 1980-81.

Besides, some significant items of educational statistics are also collected on a decennial basis through the population censuses. These include literacy among males and females of different age groups, educational attainment of workers and non-workers and of backward classes inclusive of Scheduled Castes and Scheduled Tribes by rural and urban areas.

In addition to the above, educational statistics have also been collected on *ad hoc* basis through both institutionalised and household surveys. Among the institutionalised surveys mention may be made of the Ministry of Education sponsored four all-India surveys conducted in the years, 1957, 1973 and 1978. The Third Educational Survey covered the entire gamut of education system right from pre-primary to university education, in all its aspects. In the 34th round of National Sample Survey (NSS) relating to the year 1979-80, information was collected in regard to the number of unrecognised institutions, level of employment generated through such institutions, receipt and expenditure and enrolment as on 30 September and 31 March.

So far as household surveys are concerned, mention is again made of the NSS surveys wherein details of education received by each member

of the household are collected in one form or the other. Special mention is made of its current round (1980-81) which is largely devoted to a survey on social consumption. This survey will collect information as to the nature and extent of utilisation of two important services namely, education and health. This survey would throw large amount of data in respect of participation in primary, secondary and higher education, dropouts among children of 5-14 years, education and activity particulars of youth of 15-24 years and particulars of non-resident students and activity particulars of educated persons. Information would also be made available on household expenditure on education by items of expenditure (fee, books and stationery, uniform, transport, payment for mid-day meals, other expenditures) and scholarships and other grants. However, this survey would yield information on nature and quantum of services enjoyed, but for evaluating the benefits, additional data on approximated costs of providing these services will have to be collected from the relevant institutions which dispense these services. The information on the latter aspect has to be collected from representative sample of institutions. The data from these two sources have to be integrated for a meaningful study.

Identification of Areas in which Sample Surveys are Needed

Collection of information through census is most desirable but often not practicable for obvious reasons. Census is very time consuming and very expensive. Besides, a very heavy schedule gives rise to large non-sampling errors, (enumerators' bias, respondents' bias etc.,) which are difficult to quantify. On the other hand, information collected on sample basis would, not only be less expensive but also less time consuming and more reliable. In the field of education, to repeat Ministry of Education experience, census has contributed great delay both to the collection as well as to tabulation and publication stage. With the passage of the time number of institutes engaged in imparting education has increased manifold. Data needs as mentioned earlier have also multiplied over time. There is, therefore, no escape but to resort to introducing sampling in educational data collection.

Keeping in view the requirements of policy makers, administrators, researchers and other data users, a few items have been identified in the Annexure, on which information is to be collected through surveys. The characteristic, classification and other classification of the data series, level at which information is desired on *ad hoc*/regular basis and the periodicity at which required, have also been indicated. Suitable broad type of sample survey (establishment/household) has also been suggested

for individual items.

This list, as one would see, classifies the items under three broad categories : formal education, non-formal education and education imparted through unrecognised institutions. Again, in the list of formal education, items are sub-classified under five major heads : students, teachers, non-teaching staff, building and equipment and others. Level at which information is required has generally been given under 'All India', 'States' and 'Union Territories'. States may, however, like to maintain the information at district level or even at lower levels, say, taluka level/village levels depending upon the importance of the subject matter.

Another point regarding this list that may necessitate further clarification is the 'Periodicity' at which information is required. For most of the items the suggested time interval is ten or five years. Again, keeping in view the special requirements of States, the time interval may have to be modified.

So far as the mode of undertaking the surveys is concerned, it is suggested that the surveys may be conducted in annual rounds regularly, each round devoted to a particular set of items of information. For this purpose, these items will have to be further grouped and subject matter identified for different rounds. For instance, information on formal education may be collected in first few rounds followed by non-formal education and unrecognised institutions. Again information on students may be collected in one round followed by teachers, non-teaching staff, buildings and equipment. A separate round may be devoted to students getting scholarships and availing of such facilities as fee, textbooks, mid-day meals, etc. To operationalise this scheme, it is further suggested that a small working group constituting of representatives of the Planning Commission, University Grants Commission, National Council of Educational Research and Training, Ministry of Education, National Sample Survey Organisation, Central Statistical Organisation, Universities and representatives of the States concerned, may design items, converge, etc.

*See Annexures on pages 47—51.

ANNEXURE

<i>Items of data</i>	<i>Characteristic classification</i>	<i>Other classification</i>	<i>Level</i>	<i>Ad hoc/Regular</i>	<i>Periodicity</i>	<i>Suitable broad type of sample survey (establishment/household)</i>
1	2	3	4	5	6	7

Formal Education

- | 1. The number of students enrolled as on 30th Sept., in | Part-time, Full-time attendance | Age and Sex | All-India State and Union-Territories | Ad hoc | Once in five years | Establishment |
|---|---|-------------|---------------------------------------|----------|--------------------|---------------|
| (i) Primary (I to V Classes) | | | | Biennial | Biennial | " |
| (ii) Middle (VI to VIII Classes) | Urban,
Rural | " | | Regular | Biennial | " |
| (iii) High/Higer Secondary
(IX XI/XII class) | Religion | " | | Ad hoc | Once in ten years | " |
| (iv) Graduate and above | Socio-economic class | " | | Regular | Quinquennial | " |
| (v) Professional courses | | | | | | |
| 2. The number of leavers from educational activities | As above | As above | As above | As above | As above | Household |
| | Educational qualification obtained, reasons of leaving the educational activity | | | | | |

	1	2	3	4	5	6	7
B. Teachers							
3. Number of teachers engaged in							
(i) Primary schools	Educational qualifi- cation, field of specialisation, ex- perience, full-time, part-time	Age and Sex Urban, Rural	All India and State	Ad hoc	Once in five years	Establishment	
(ii) Middle schools				Regular	Biennial	"	
(iii) High/Higher Secondary schools				Ad hoc	Once in ten years	"	
(iv) College for general edu- cation (Post-graduate and degree standards)	Socio- economic class			Regular	Quinquennial	"	
(v) Universities							
(vi) Professional/vocational Institutional							
4. Gains to teaching stock in schools as in 3 above	as above	as above	as above	as above	as above	as above	
5. Losses to teaching stock in schools as in 3 above	as above	as above	as above	as above	as above	as above	"
6. Pay structure of teachers engaged in schools as in 3 above	Recognised/unrecog- nised Institutions	Trained & Untrained	Centre, State and Union- Territories	Ad hoc	Once in ten years	"	

	1	2	3	4	5	6	7
C. Non-Teaching Staff							
7. Number of							
(i) Inspectors	—	Sex, Qualification	All India, States and Union-Territories	Regular	Quinquennial	Establishment	
(ii) Other administrators	—	"	"	"	"	"	
(iii) Clerical staff	—	"	"	"	"	"	
8. Pay structure of non-teaching staff							
Recognised/unrecognised Institutions	Trained & Untrained	Centre, States and Union-Territories	Ad hoc	Once in ten years	"		
D. Buildings and Equipment							
9. Capacity of educational buildings and major facilities (Hostel, Health Services, specified rooms for laboratories, games and sports) in institutions as mentioned in 3 above	—	—	States and Union-Territories	Regular	Biennial	Establishment	
10. Net addition to capacity for establishments as above	—	—	as above	Regular	Biennial	Establishment	

	1	2	3	4	5	6	7
11. Number of students getting scholarships and availing of such facilities as free textbooks, mid-day meals, etc.							
E. Others							
Grade of education	Age and sex Urban, Rural, Religion, Socio- economic class	All India, States and Union- Territories	Regular	Quinquennial	Household		
12. Number of repeaters	Grade of education	Age and sex Urban, Rural, Socio- economic class	,,	Regular	Quinquennial	Establishment/ Household	
13. Work load of teachers	Institutions providing General Education, Professional Education, Vocational education	Trained, Untrained	Centre, States and Union- Territories	Ad hoc	Once in five years	Establishment	
14. Unit cost of providing education	Grade of education	—	—	States and Union- Territories	Regular	Quinquennial	Establishment
<i>Non-Formal Education</i>							
15. Number of Institutions	Grade of education	—	—	All India, States and Union- Territories	Biennial	„	„

1	2	3	4	5	6	7
16. Number of students enrolled	Part-time, Full-time attendance	Age and sex Urban, Socio-economic class	All-India, States and Union-Territories	Regular	Biennial	Establishment
17. Number of teachers	Part-time, Full-time, Educational qualification, field of specialisation and experience	All-India, States and Union-Territories	"	"	"	"
18. Pay structure of teachers	as above	as above	All India, States and Union-Territories	Ad hoc	Once in five years	"

Education Imparted through Un-recognised Institutions

19. As above (items 14 to 17) through establishments.



Collection of Educational Statistics Through the National Sample Survey*

S. K. BANERJEE

Introduction

Literacy rate has been increasing in India since Independence. From 16.6 persons per hundred in 1951 it reached 29.4 in 1971 at all-India level. But the rate of literacy varies from state to state. Highest literacy rate is observed in Kerala (60%) whereas Bihar (20%), Jammu & Kashmir (19%) and Rajasthan (19%) have very low literacy rates among the major states in India. There has been a phenomenal growth in enrolment. School and college going students increased from 26 million in 1950-51, to 82 million in 1970-71. In order to assess the problems and their nature and to attain the goal of universal elementary education, educational planners require a lot of up-to-date educational statistics.

Ministry of Education and Culture have been collecting educational statistics with the help of state directorates of education on the basis of annual return from all the recognised institutions from primary to higher secondary level. National Council of Educational Research and Training is also conducting all-India educational surveys sample or census basis covering various types of institutions ranging from primary to higher secondary level. The University Grants Commission collects educational data from colleges and universities. For all those concerns, a data collection unit is an institution. Decennial census is another important source of educational statistics. Its coverage is entire population and its unit of study is an individual. Even then, some important data gaps are there for educational planning and research. Though data are collected by the Ministry of Education and Culture and the National Council of Educational Research and Training on census basis, yet the coverage may not be complete because of the

* The view expressed in this paper is of the author and not of the organisation to which he belongs.

non-coverage of unrecognised institutions and defaulting recognised institutions.

The idea of this paper is to point out some important educational statistics that are being collected through the National Sample Survey (NSS) rounds. The National Sample Survey is currently conducting a large scale sample survey on social consumption in its 35th Round (1980-81), which will be of much help to fill up some important data gaps in the field of educational statistics. The important features of this survey have been discussed in this paper. This will also highlight the areas where census and sample surveys are to be conducted for collecting educational statistics. Lastly, a sampling plan is suggested so that the coverage is extended to include preprimary and unrecognised institutions also.

Collection of Educational Statistics through the NSS

The NSS has been conducting nation-wide socio-economic surveys since 1950. Though full-fledged enquiry on education has never been attempted in any of the rounds of the NSS so far, yet auxiliary information on attainments in general and technical education in respect of individual household members have been regularly collected as a classificatory characteristic through the various household schedules canvassed in many of its socio-economic enquiries. In this connection, mention may be made of enquiries on employment and unemployment, consumer expenditure, population, births, deaths, migration and family planning, etc.

It is for the first time in the NSS 34th Round (1979-80) that a nation-wide survey was conducted to collect data from the unrecognised educational institutions mainly from the view point of their activities as an enterprise. The result of this survey is expected to supplement the official statistics confined to recognised institutions only.

Data on educational statistics are being collected in the NSS 35th Round (1980-81) following the household approach as a part of enquiries on social consumption.

A special survey on education was conducted in some of the states of the north-eastern region only in the NSS 31st Round (1976-77). The results, expected to be thrown up by this survey, are as follows: proportion of children currently attending educational institutions, by age and sex, population distribution by general and technical education, age-sex composition of students by types of institution, age at entry in school, educational facilities provided by the institutions, private

expenses on education, rate of dropout by age and level of education, and particulars of the educated unemployed.

Auxiliary information relating to education, collected in the employment and unemployment enquiries, or the urban labour force surveys, mainly pertain to educational status. The particulars of this are usually available in two basic tables. The first one is the classification of general population by age, sex and educational status, separately for rural and urban sectors. Educational status in both rural and urban areas in most cases is divided into (a) illiterate, (b) literate but below primary, (c) primary but below secondary, and (d) secondary and above. For urban areas, the classification of educational status is sometimes more elaborate. Secondly, all persons in labour force and classified by educational status, age-group and sex, separately for rural and urban areas. The employed and the unemployed constitute the labour force and the rest are persons not in labour force. Sometimes special tables are prepared as per requirements in some rounds. They have been presented in a tabular form along with the round and year in the Appendix.

Data on Educational Statistics Covered in NSS 34th and 35th Round

Information on roll strength, employment particulars, receipts and expenditure of unrecognised institutions, have been collected in the NSS 34th Round (July 1979-June 1980). The items of information collected were number of students enrolled in the institution, number of persons employed by teaching and non-teaching staff, and also by the hired and not-hired ; receipts by tuition fees and other sources ; expenditure separately for teaching and non-teaching staff ; rent for assets not owned, interest for loan and other operational expenses.

Collection of data of education in the NSS 35th Round will help to fill up very vital and useful data gaps in the field of educational statistics. This will help us know the rate of participation in primary, middle, secondary, and higher education, including technical training, if any, by age, sex and class ; the rate of discontinuation of students by age, sex and reason for discontinuation; those who are currently attending any educational institution will be enquired about the types of institution they attend, in which class/standard they are enrolled, what facilities they enjoy in regard to tuition fees, mid-day meal/tiffin, school uniform, etc ; whether they receive any stipend/scholarship from government or any other agency; question will be asked whether they receive any benefit as a member of Scheduled Caste or Scheduled Tribe or backward community; usual activity particulars along with industry occupation will be collected for those who have discontinued studies.

For students who are currently enrolled in an institution, information will also be collected on annual education expenses for tuition fees, examination fees, books and stationery, uniform, transport and private coaching, etc.

Attempt will also be made to gather particulars of non-resident student members who are dependent on the sample household, but are currently residing away in a hostel, mess or boarding house, etc. Information of student members of his age, sex, highest level of education attained, and the level of education currently being pursued, benefits they enjoy in the institution; type of boarding and lodging arrangement and expenses per month are elicited. Particulars of educated youths are also collected by their educational attainment for both general and technical education along with the particulars of their usual and current activity.

Demarcation of Areas for Census and Sample Surveys

To ensure the receipt of return from institution in time, and to reduce the time lag in collection, tabulation and publication of educational statistics, the form of return should be simple. Items of information should be need-based and limited in number to those that are required most for the management of educational system. It will be more helpful if stages of data collection are reduced. Sometimes planners are over ambitious and want to include more items for collecting information, which is not practicable in one go. Informants feel hesitant and take unnecessarily long time when they find big forms with many items to be filled in. Even in case of household enquiry, where the schedules are filled in through making personal contact with one or more members of the household by the investigator, the informant does not keep the appointment and tries to avoid it if the schedule is big. If the number of schedules is more than one, the informant gets tired and supplies information casually. Some sort of negligence may crop up even with the investigator. Though it is economical to conduct multi-subject enquiry at a time, the quality of data may suffer. This may happen due to the unwillingness of the informant to part with the data and, at the same time, due to forgetfulness on the part of investigator who misses some important points at the time of enquiry.

So the information of primary importance like (i) number of institutions by location (rural/urban), type of management, (governmental-local body/private aided/private non-aided), level of institution (pre-primary/primary/middle/secondary/higher secondary/secondary/others)

and section (boys/girls/co-education) ; (ii) enrolment of students by class and sex ; (iii) enrolment of Scheduled Caste, Scheduled Tribe and other backward communities by class and sex; (iv) number of teaching staff by sex, separately for the trained and untrained ; (v) number of non-teaching staff by sex and category of worker (accountant), clerk, daftary darwan and others), (vi) receipts by main source (government aid, grants, donation, school fees and others ; (vii) expenditure by board, items (capital expenditure, salary and wages, welfare and other operational expenditure), and (viii) examination results by sex and class may be collected annually from the institution on census basis.

The following basic tables may be generated from the above items of information:

1. Enrolment by sex, levels and types of management of institutions.
2. Number of students enrolled by sex, class, section and level of institution.
3. Number of institutions, number of teaching staff (by sex), number of non-teaching staff (by sex) and students (by sex), by level and type of management of institutions.
4. Number of Scheduled Caste, Scheduled Tribe and other backward community students by sex, class, level and type of management of institutions.
5. Receipts by sources and by levels and types of management of institutions.
6. Expenditure by items and by levels and types of management of institutions.
7. Expenditure per student enrolled by capital and current type of expenditure.
8. Student-teacher ratio ; primary school enrolment as a percentage of total enrolment, secondary school enrolment as a percentage of primary enrolment by levels and types of management of institutions.
9. Number of institutions by size of enrolment and levels of institutions.
10. Proportion of successful and unsuccessful students in the last annual examination by class, sex and level of institution.

All the above tables may be prepared separately for rural and urban areas for comparative study. From the above tables progress of education among the females, Scheduled Caste and Tribe, and backward communities, may be obtained. Differential study in regard to institutional expenditure per student, staffing pattern, student-teacher ratio, performance of school examination and so on may also be done by level and type of management of institutions.

Certain information of primary importance like enrolment by age, etc., which could not be included in the annual return in order to reduce the burden of data collection, may be collected periodically from educational institutions in regular manner through the nation-wide sample surveys. The period may be fixed by the need and requirements of the planners and administrators. These are (i) enrolment cross-classified by age, sex and class; (ii) enrolment of Scheduled Caste, Scheduled Tribe, other backward communities, religious and linguistic minorities by age, sex and class; (iii) teaching staff by age, sex qualification, trained or untrained, experience, salary drawn; (iv) number of students enjoying scholarship, stipend, free studentship etc. by sex and class; (v) workload of teachers; (vi) number of repeaters, dropouts, failures in the examination by age, sex and class; (vii) non-teaching staff by age, sex, qualification, experience, category of worker and salary drawn; (viii) type of facilities provided in institutions mid-day/free or subsidised tiffin/uniform/transport/hostel/staff quarters, etc.; (ix) particulars of school building and other assets: number of classrooms; total available space, teaching equipment, furniture and fittings, etc.; (x) library, science laboratory, and other curricular facilities and co-curricular facilities (NCC, Girl-Guide, etc.); (xi) receipts by source and expenditure by items as per requirement; (xii) working condition of teachers and so on.

All the information will be obtained by level and type of management of institution with urban and rural breakdown and also by recognised and un-recognised institutions.

All the above information will help to assess the proportion of children of school age enrolled in schools, the relative proportion of boys and girls in various age-groups, and the proportion of children continuing at school after any given age. This will also help make a comparative study of student-teacher ratio at different levels of institution; literacy rates by age and sex; progress of education in respect of Scheduled Caste, Scheduled Tribe, backward communities, religious and linguistic minorities; institutional expenses per student at different levels; teaching and non-teaching staff pattern by sex at different levels, and type of management of institution; area per student and number of student per classroom at different levels; institutions by size, class-wise enrolment and level of performance at school and final examinations; rate of retention, rate of failure and rate of dropout; types of facilities provided in institutions by level; proportion of students getting facilities like scholarship, free-studentship, etc. by level of institution; receipts and expenditure pattern by level and types of management of institution and so on.

Comparative study can also be made for rural and urban, and also for recognised and unrecognised institutions.

Special studies may be required to know (i) the socio-economic condition of students and teachers, (ii) data on non-formal education ; (iii) data of private expenditure on education ; (iv) information on health and home background of students ; (v) data on utilisation for existing facilities by the society at large ; (vi) information on job aspiration of student ; (vii) study of long term educational requirements, and so on. Data for (iii) and (v) may be obtained through the results of the NSS 35th Round. For others, data may be collected through *ad hoc* sample surveys on household approach.

Sampling Plan for the Collection of Educational Statistics through Sample Surveys

Sample survey technique may be fruitfully utilized to collect the data required to meet the growing demands for educational statistics. This will lead to saving in cost and time for data collection and tabulation. Technically qualified and experienced persons may be employed to collect and supervise the collection of more reliable data as per the specification of an optimally designed total survey procedure.

For conducting a sample survey, it is essential to have a frame of all sampling units belonging to the population under coverage of the survey, with their proper identification. For collection of educational statistics both households and educational institutions are convenient clusters of the ultimate observational unit of the individual/student. But the choice of sampling unit depends on the objective of the survey. For example, if the objective is to calculate participation rate in primary education and the dropout of students at the primary stage, we may follow either the institution approach, or the household approach. But, in the household approach one may get another vital information, i.e., the reason for discontinuation which may be difficult to obtain by institution approach. To collect the information on private expenditure on education, activity status of children of school-going age, who are not currently attending any institution, data on health and home background of children, data on utilisation of existing education facilities by the society at large and so on, household survey may be required. But, for school management, educational planning and its assessment most of the data required pertain to the institution and for all these cases institution should be the proper unit of survey. For example, school enrolment by age, sex, class and by stage of education, school attendance by class, number of pupils per teacher, expenditure per pupil enrolled, pattern of teaching and non-

teaching staff may be mentioned.

In a developing country like India, up-to-date list of households and institutions are not readily available. The best alternative is to use area sampling frame. It would be better to take a sample of area units from a suitable frame and list all the institutions/households in them only. All the institutions/households may be completely surveyed, or only a sample institution/household may be surveyed from them.

Stratification and Sampling Scheme

Stratification is a very common technique to gain in precision in the estimates of characteristics of the whole population. For practical considerations and administrative convenience, administrative units like district or *tehsil* may be considered as the primary stratum. Sub-strata may be formed on technical grounds within each stratum. For urban areas, each big city may be treated as sub-stratum by itself. Other cities and towns may be grouped into different sub-strata on the basis of their population content. Sample selection is to be done independently from each sub-stratum.

It has been found from experience that when area sampling is used, a two stage design, with village in rural and urban enumeration blocks in urban areas as first stage units (fsu), and households or educational institutions as the second stage units (ssu), is most suitable. The sampling procedure should be formulated to avoid bias in the selection. Method of probability proportional to size (pps) sampling with replacement may be adopted to select the first stage sampling units, since it provides estimates more efficient than the simple random sampling. Here, size will be the measure of an auxiliary variable related to the study variable. This method is specially useful when the fsu's differ widely in sizes.

For a survey on education, the number of literate persons, or number of students enrolled in schools, may be used as the size measure. But when the whole country has already been stratified homogeneous groups, population may be treated as the appropriate size for educational statistics.

When the selection of fsu's are over, the next step is to list all the households or educational institutions in the ssu's. Suitable information may be collected from each ssu during listing. Such information may be household size and household occupation, etc. For household occupation etc., for households and for educational institutions, it may be the level stage of education it provides, roll strength etc. Arranging all the ssu's with this auxiliary information, a systematic sample may be selected to ensure proper representation of the different sections of popu-

lation in the sample.

For computational convenience, a self-weighting design may be adopted, which reduces the number of multiplier and thereby reduces time for estimation without losing any efficiency of the design.

Method of Enquiry

To ensure better coverage in the sample survey on institution approach, method of data collection should be mail-cum-interview method as in the Annual Survey of Industries, i.e. by mailing the blank return along with the instructions to fill it up to the institutions, requesting them to send it back by a certain date. In case of non-receipt of the return, it is to follow it up by appropriate survey staff more than once, if necessary, to reduce the non-response rate to an acceptable limit within the prescribed budget. If required, some statutory measures may be adopted for eliciting requisite information from the private institutions.

Lastly, it may be suggested that the Centre should have a permanent survey unit fully equipped with trained and experienced survey personnel to conduct sample surveys on education all over India through the state directorates of education, on the line suggested in the foregoing paragraphs. State directorates of education should also have a regular cadre of field staff thoroughly trained in the basic concepts and definitions pertaining to the education in India.

Some Remarks

All possible care should be taken to reduce the time for collection, tabulation and publication of educational statistics collected annually by the Ministry of Education and Culture through the state directorates of education. To achieve this coveted goal, there should be close coordination between state directorates of education and Ministry of Education. Lack of coordination and supervision at different stages of work sometimes dampens the spirit and also slackens the tempo of progress of the work. There should be a coordination cell at the Centre with some inspecting officers who have free access to the state directorates of education in order to supervise the work of collection and tabulation of educational statistics in every State. Inspecting officers will keep a close watch to maintain the quality and time target at every stages of work. In case of non-availability of returns in time from schools of remote rural and inaccessible areas, in spite of the efforts in the line suggested earlier, flexibility should be there to substitute those returns

with the returns of nearby places having similar characteristics or with past returns.

Lastly, choice of sampling scheme for a survey depends on the availability of sampling frame, auxiliary information on sampling unit, survey personnel, data processing equipments, sampling variances and costs. If any results of past surveys are not available, it is advisable to take up a pilot survey first with limited scope and coverage to try out the questionnaire and study the time, variability and costs and also to get some idea about the estimate of the study variable. Under present circumstances, a two-stage sampling design-pps with replacement for the selection of fsu's and systematic sampling for the selection of ssu's has been considered most suitable for a survey on education which will remove deficiencies regarding the coverage.

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ANNEXURE

Some tabulations by educational status in the NSS
(Table Nos. 1 to 10 taken from Employment and Unemployment Survey)

Items of tabulation	Sector (rural/urban)	NSS round	Survey Period	
			1	2
1. Employed persons by educational status and Sex	rural and urban	10	Dec. '55 — May '56	
	rural and urban	11 and 12	Aug. '56 — Aug. '57	
	urban	13	Sept. '57 — May '58	
	rural and urban	14	July '58 — June '59	
	rural and urban	15	July '59 — June '60	
	rural	16	July '60 — June '61	
	urban	20	July '65 — June '66	
	urban	22	July '67 — June '68	
2. Employed persons by educational status x occupation x sex	urban	16	July '60 — June '61	
	urban	19	July '64 — June '65	
	urban	20	July '65 — June '66	
3. Employed persons registered at employment exchange for better employment by educational standard x occupation	urban	17	Sept. '61 — July '62	
	urban	19	July '64 — June '65	
4. Unemployed persons by educational status x age-group x sex	urban	21	July '66 — June '67	
	urban	22	July '67 — June '68	
5. Unemployed persons by educational status x sex	rural and urban	11 and 12	Aug. '56 — Aug. '57	
	rural and urban	14	July '58 — June '59	
	rural and urban	15	July '59 — June '60	
	rural and urban	16	July '60 — June '61	
	urban	17	Sept. '61 — July '62	
6. Unemployed persons by educational status x sex x duration of unemployment	rural and urban	10	Dec. '55 — May '56	
	urban	13	Sept. '57 — May '58	
	urban	16	July '60 — June '61	
	urban	19	July '64 — June '65	
	urban	21	July '66 — June '67	
	urban	22	July '67 — June '68	
7. Unemployed persons by educational status x sex x whether registered at employment exchange for employment	rural	10	Dec. '55 — May '56	
	urban	19	July '64 — June '65	
	urban	20	July '65 — June '66	
	urban	22	July '67 — June '68	

1	2	3	4
8. Unemployed persons registered at employment exchange and not registered at employment exchange by educational standard	urban urban urban urban	10 16 21 22	Dec. '55 — May '56 July '60 — June '61 July '66 — June '67 July '67 — June '68
9. Unemployed persons by general and technical education X attitude to registration	urban	15	July '59 — June '60
10. Unemployed persons by general education X type of job preferred	urban	10	Dec. '55 — May '56
11. Labour force participation rate by educational status X age X sex	urban rural and urban urban	17 19 21	Sept. '61 — July '62 July '64 — June '65 July '66 — June '67

Table Nos. 12 to 15 taken from Employment and Unemployment Survey, NSS 27th rounds (Oct. '72—Sept. '73) separately for rural and urban.

12. Distribution of person-weeks by general-cum-technical education, X person-weeks working, seeking work, not seeking but available for work, not available for work X sex.
13. Average weekly earnings of wage and salary earners by general-cum-technical education X sex.
14. Number of stay-aways by general education X reason X sex.
15. Total persons by general-cum-technical education X persons working, seeking work, not seeking but available for work, not available for work X sex.

Sample Surveys to Ascertain the Educational Facilities for Scheduled Castes and Scheduled Tribes

J. C. SAXENA

Scheduled Castes and Scheduled Tribes constitute about 15 and 7.5 per cent respectively of the total population of the country. Due to social and economic handicaps, they have remained educationally backward also. So far, efforts have been made to bring more and more children belonging to these communities to schools. Such efforts have succeeded to some extent as will be seen from the Annexure. More important than even enrolment is the actual attendance of these children and their retention in schools. Sample survey need to be undertaken to ascertain these aspects of actual attendance and retention rates so that remedial measures are taken to improve the situation.

Efforts are needed to improve the internal efficiency of the system well to retain the students particularly of these vulnerable sections of society. Schools were run by multiple agencies, such Panchayat Samitis, Zila Parishad/District Education Authorities, Integrated Tribal Development Agencies, and so on. Often it was seen that there was no uniformity in their administrative organisation, syllabi and curricula, policy regarding recruitment and training of teachers. This led to a lot of difficulties in educational planning since each of these agencies tried to have its own rules. Sample Surveys are needed to examine the problem of coordination among these several agencies in the several directions connected with the problem of education of children of SC and ST.

The dropout ratios among SC and ST are really alarming. A study conducted by the Kaktiya University, Warangal (AP), has revealed that the dropout ratio among the tribals was 96.09 per cent at upper primary level, and 97.76 per cent at high school level. As only 3.91 per cent of children crossed the upper primary level and among them only 20.24 per cent reached higher secondary level, there was enormous wastage which a poor country like India can illafford. Further, the

dropout rate among girls was even higher. The extent of wastage and its causes needed to be explored in various areas through sample surveys, and suitable action taken to improve the situation.

The package of incentives offered in the form of free books and stationery, school uniforms, free meals, Ashram schools, etc. have not achieved the desired results in the matter of enrolment and retention of SC and ST children. A fresh study of these incentives on a sample basis is desirable to bring about a change in this package so that these measures succeed in the case of comparatively much weaker and backward sections of our population, which suffer due to age-long adverse social and economic factors operating in the families.

These children are, more often than not, an economic asset to the family. Further assistance, therefore, has to be provided to substitute for the absence of these children from home when they go to attend schools. Changes in the system of delivery of packages of incentives needs to be examined.

The relevance of curricula was also to be examined to improve the quality of education at all levels. This applied to methods of teaching, evaluation techniques, delivery system and supporting services in the process of education. An integrated approach with greater relevance to the economic needs and social realities and culture of this population was required. In particular, it should enable the participants get part-time jobs or technical and non-technical jobs, may be even before a rigid study of 10 or 12 years, through earning-while-learning systems.

The training of teachers in this context required a special re-orientation. Suitable teachers in these backward and far flung areas were not available, ways and means had to be found to ensure teachers of the right type on a regular basis for these areas. In this connection, the question of paying special allowance/incentives to these teachers needed to be considered.

These are some of the areas in which sample surveys can render great help in ensuring quality of education of the children of SC and ST. Many more such areas can be suggested, but these areas mentioned above may be taken up on a priority basis.

ANNEXURE

Total enrolment at all levels from 1964-65 to 1976-77

(in 000's)

<i>Year</i>	<i>All Communities</i>	<i>Scheduled Castes</i>	<i>Scheduled Tribes</i>
1	2	3	4
1964-65	6,74,17	72,88 (10.8)	28,10 (4.2)
1965-66	7,05,55	76,86 (10.9)	29,79 (4.2)
1966-67	7,37,00	81,47 (11.1)	30,60 (4.2)
1967-68	7,65,82	83,06 (10.8)	31,50 (4.1)
1968-69	8,29,94	85,49 (10.3)	31,41 (3.9)
1969-70	8,10,27	87,67 (10.8)	33,53 (4.1)
1970-71	8,24,03	87,19 (10.6)	33,52 (4.1)
1971-72	8,45,69	90,33 (10.7)	35,47 (4.2)
1972-73	8,91,30	96,58 (10.8)	40,16 (4.5)
1973-74	*	*	*
1974-75	9,36,65	1,03,46 (11.5)	42,73 (4.6)
1975-76	9,52,86	1,09,06 (11.1)	44,43 (4.7)
1976-77	9,97,21	1,17,80 (11.8)	48,56 (4.9)

* Not published.

Note : Figures in parenthesis show percentage of enrolment to total enrolment in Col. (2),

Sample Surveys and their use in Economics of Education and Educational Finance in India

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In this paper we shall indicate the data gaps that exist in the area of economics of education in general, and educational finance in particular, in India, and how sample surveys can be pressed into service for getting such data for purposes of educational planning and policy making. It will be shown that such data are needed for the purpose of achieving the objectives of equality of opportunity in Indian education and for ensuring that the available resources for education in India are effectively used.

Sources of Educational Finance

A very recent publication of the Ministry of Education, Government of India, shows the following in regard to the source of funds for Indian education:

Source	1950-51	1978-79
Government Funds	57.1%	80%
Local Board Funds	10.9%	5%
Fees	20.4%	12%
Endowment & Other Sources	11.6%	3%

From the point of view of Indian educational policy the following considerations are relevant.

1. The share of government funds—the central government and the state government's share in financing Indian education—has increased from 57.1 per cent to 80 per cent in the last 30 years. What are its implications from the point of view of equity and resource availability in future? Many observers have pointed out that the developed

countries in their early stage of development had relied to a much greater extent on local and state level funds, and only later adopted the practice of centralised financing. Should we follow their practice, or should we follow another practice which can be our own ?

2. The share of local board funds—local authorities—has gone down from 10.9 per cent to 5 per cent. This must be made up of varying shares of funds by different local authorities in the various states in India. It is necessary to know what kinds of local authorities have increased the share in educational financing in the last few years, if any, and in what kinds of local authorities it has gone down ?

3. The share of fees has gone down from 20.4 per cent to 12 per cent. This raises the well known point which has been frequently made about the need for raising fees. In this connection, it is necessary to point out that the Education Commission of India has suggested that education will have to be free in the sense that no tuition fee is levied, but a liberal policy of scholarship and freeships will have to be given at all levels of education. This is because of the equal importance that we have to give in regard to private expenditure on education apart from fees especially due to the rising prices of books, stationery, meals, etc., and the growing disparity in the distribution of income and economic opportunities for different classes of people in India.

4. Endowment and other sources have gone down from 11.6 per cent to 3 per cent. But it has been pointed out that a new kind of donor has come up in recent years and its importance is growing and the donors are from the corporate sector in India. Is there any information about them ?

Apart from the above questions which have to be tackled adequately from the point of view of educational policy and planning, there are certain other aspects in regard to the educational finance data. Some of them are the following.

a. There is under-reporting of different kinds, for example, investments made by the public and voluntary agencies in the initial stages of the establishment of institutions, and later, at the time of their further growth; particularly institutions of higher education which have to incur a portion of non-recurring expenditure on land, buildings, equipment, etc. To what extent this under-reporting is serious ?

b. The information on sources: Is this information about the sources of educational finance complete ? Are there other sources of finance for education ? Apart from the private expenditure on education, which the parents have to incur, is there any kind of expenditure on education on which information is lacking ?

At present the Ministry of Education is bringing out an analysis of the budget of the states and central government, in which expenditure incurred by not only the Education Ministry or Department but also by all the other departments and Ministries of Education, is taken into account. Is there any other expenditure incurred on education?

What about the expenditure on unrecognised institutions? It is well known that there are a number of unrecognised institutions and expenditure incurred on education by them has also to be taken into account.

Private Expenditure on Education

From the point of view of equity in education, the expenditure or the cost incurred by a student on his education are the following.

- a. Tuition and other fees
- b. Cost of books, equipment and stationery
- c. Cost of maintenance, boarding and lodging separately for day scholar and hostellers
- d. Other sundry expenses

It is obvious that this private expenditure on education varies from one level of education to other, from rural to urban areas, and from one income group to another group. There is practically no information on the nature of this private expenditure on education. We have given below something about the private expenditure on education which has been put in the White Paper on National Income published by the Central Statistical Organisation. As can be seen this is an aggregate data and this has to be analysed with reference to all the variations that have been mentioned above.

According to the National Accounts Statistics (1980) published by the Central Statistical Organisation, Government of India, in 1977-78 private expenditure on education was 1,928 crores of rupees at current prices. It was 195 crores in 1950-51 in 1970-71 prices. Between 1970-71 and 1977-78 private expenditure on education has gone up from 896 crores to 1,928 crores of rupees in current prices. It may be noticed that at current prices the share of private expenditure on education between 1970-71 and 1977-78 has gone up slightly from 3 per cent to 3.1 per cent, but at constant prices it has gone down slightly from 3 per cent to 2.9 per cent. Such a behaviour of the share of private expenditure in the total expenditure of consumption of the households in India is indicative of the inflation prevalent in the Indian economy.

The figures given above are aggregate in the sense that they refer to the

country and the economy as a whole. But it is well known that there is a great deal of inequality in the distribution of income and economic opportunities, and hence the private expenditure on education also varies a great deal. For example, a recent study on Income and Expenditure Pattern of Punjab Farmers has found that there were large variations in the percentage share of private educational expenditure in the total budget of the families of the farmers. In one zone (Zone III) the private educational expenditure was 12.84 per cent, while in Zone II, IV and I it was only 12.50 per cent, 7.13 per cent and 5.82 per cent, respectively, of the total private expenditure.

Further, the domestic expenditure per farm family for various farm sizes in different zones in Punjab also differs greatly from each other. The per capita expenditure in the farm family was 62.38 rupees (Source : *An Analysis of Income and Expenditure Pattern of Punjab Farmers—1978-79*, published by the Department of Economics and Sociology, Punjab Agricultural University, Ludhiana).

It is also necessary to know how this private expenditure on education has been changing in response to urbanisation as well as change in the levels of income. Over a period of time information on this income elasticity of expenditure on education will be of great use for various policy and planning purposes.

Unit Cost in Education

One of the important items of information that is frequently published in publications of the Ministry of Education is in regard to the unit cost. For examples, in 1975-76 the unit cost in primary schools was Rs. 95.5, for middle schools Rs. 144.2, for high and higher secondary schools Rs. 257.3, and they have risen from 10.9, 27.9 and 58.8 rupees in 1950-51. These are unit costs for schools like primary schools, middle schools, secondary schools and colleges. But what is of great importance is the unit cost by levels of education. At present in India, in primary schools there are pre-primary sections, in middle schools there are primary classes, in secondary schools there are also middle sections and primary sections. Further, in colleges there are graduate and post-graduate courses. In agricultural universities, for example, there are research activities, teaching activities, and extension, and it is found that research consumes 50 per cent of the total recurrent expenditure in Punjab Agricultural University, for example, teaching 40 per cent, and the balance is distributed among other activities. Very often it is necessary to know what is the unit cost by levels of education and by kind of education, especially from the point of view of planning and projecting the future requirements. For these

purposes it is not necessary to know the situation in full in all the institutions, instead it is enough if a sample survey is undertaken.

Educational Expenditure and Redistributive Effect

As we have already seen, educational expenditure is mainly government expenditure and so it has redistributive effect. As an aid to government policy it is necessary to develop a suitable measure of social consumption as an aid to social policy. In this context, social consumption refers to the excess of what a person gets as benefit from the public expenditure over what he pays to the government for that service. For this purpose we can adopt either a cost approach and work out the cost of the service per beneficiary, or the cost contributed by the beneficiary. It can also be worked out either through the institutions concerned, or from an enquiry from the households. The enquiry from the institutions will provide estimate on cost of service per beneficiary. Its sample design will be stratified on the basis of the degree of aid from government—government schools, aided schools and non-aided private schools. Household enquiry will provide estimates of the net cost incurred per beneficiary by the household for education. It will also provide estimates on taxes paid by the household, both direct and indirect. Further, an area-based multipurpose sample design may prove efficient for estimating private expenditure incurred by beneficiary. A special sample will have to be selected for estimating the element of subsidy. Estimates of social consumption also will have to be built up for different sections of the population.

Sample Surveys and Ad hoc Data Collection

All the statistical information needed by planners on the above items as well as from many others need not be collected regularly, or with respect to students or teacher population because :

(a) many of the data are difficult to get and hence frequent collection may be expensive ;

(b) many of the co-efficient required are not likely to change repeatedly ;

(c) estimating the expenditure and distribution of various characteristics of the population is possible with good sample procedures. A sampling frame suitable for a number of different purposes should be established.

For example, in India, it is well known that there are different kinds of schools and their performance on various aspects show considerable

variation. It will be useful to collect information on characteristics of primary schools, middle as well as high and higher secondary schools, for example, on size, length of training and quality of teachers, location, availability of equipment and facilities, etc. which are known to have an influence on the quality of instruction. This information need not be collected always but they can be collected on a sample basis in order to test certain hypothesis in regard to the relationship between quality of education and other aspects. With the help of such studies more can be known on the production function of education.

Information on education-occupation relationship—Normally this information on education-occupation relationship is available in sectors from the census which is taken only once in every 10 years, and also from the surveys that are undertaken by the Director General, Employment and Training, in the Ministry of Labour, who are doing in alternative years for public sector and private sector. But they are limiting their attention to certain establishments either in the private or public sector. Information can be collected on a sample basis for certain public and private sector institutions in order to examine the education-occupation relationship in those institutions. Such studies are very badly needed for the purpose of finding out the relationship between education and productivity.

Information on the earnings of the educated people—There is a great deal of talk in regard to the necessity for an income policy, and recently a report has also been submitted to the Government on the need for an income policy (Boothalingam Committee Report). But a very important prerequisite for an income policy is regular information on the earnings of the educated people by levels of education and how they have been changing. Is the educated people's income always more than the income of the less educated? Is it always correct? Also the earnings of people by levels of education can be collected frequently on a sample basis by regions in order to calculate the return from investment in education, because even though the economic considerations is not the only one in adopting a proper educational policy, it has to be an important one in developing economy which has scarcity of resources.

India has an economy with surplus labour, and the dynamics of decision making of students in regard to various courses of studies is something which has to be constantly looked into for the purpose of proper guidance of their educational career. This is influenced by his individual characteristics and several other factors like the occupation of the head of the family, education of the parents, family income, size of the family and whether urban or rural. Information on these can be collected with great advantage on a sample basis. We shall end up by saying that a small amount of expenditure, incurred on sample surveys in order to get infor-

mation which can provide guidance for sound policy making in educational planning, is well worth making.

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Role of Sample Surveys in Education Illustrated by an Example of Wastage in College Education

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Introduction

All planning is based on the knowledge of some facts. This is also true of planning for education in a region or State. Some of the facts can be collected by a census by sending letters to the managers of schools and principals of colleges and asking them to supply some facts about their institutions.

The management has a lot of other problems to tackle and it is quite possible that the information about a majority of institutions is of indifferent quality. The error in the facts supplied may be deliberate, or it may arise because the respondent does not take the request for information seriously. It may be worth while to take a sample of these institutions, send an expert investigator there and check the facts. This is one role of sample surveys in education.

There may be another kind of information that may be impossible to collect by correspondence. For instance, information on the opinion of teachers, students, management and guardians of students about some policies. The policies may be for making certain subjects optional, change in courses, the medium of instruction, the books, the number of students per class or section, admission policy, reservation, etc. The success of any policy depends to a great extent on the opinion of the persons affected. Besides, some of the affected persons may come out with suggestions which are practical and offer modifications to existing policies.

It is impossible to collect this information from every affected person because of the time and cost involved. So, it is necessary that we take recourse to a sample survey.

In the following paras we illustrate the use of sample surveys in edu-

cation by a specific example. The planners want to reduce wastage in college education. The discussion that follows is not an attempt in giving the actual solution but to suggest the type of data needed, the reasons why it cannot be collected by a census, and to suggest a sampling design which is likely to succeed. This is only an illustration and it is not claimed that the sampling design cannot be improved upon.

Concept of Wastage in Education

Government gives financial aid to the educational institutions. The distribution of this aid over the number of students implies that there is an expenditure per student. If some students fail and consequently take more time than the minimum required, some of this money may be considered to have been wasted.

There are also some students who drop out, i.e. leave the course before completing it—either to join some other course or to join some service. The entire expenditure on such students may be considered to be a waste.

This wastage is only from the point of view of the Government. The entire expenditure of education is not borne by the government—it is partly borne by the family of the student. The expenditure from the family's point of view may or may not be considered as wastage. Probably the student, because of his individual capabilities, could not take less time than he actually did. Also, perhaps the knowledge that the student gained during the time he attended the course before dropping out did help him in getting the job. Of course, in some cases there may still be wastage, and the family may feel that it would have been better if the student had not spent the time in college.

A large number of students who complete the course are unable to get a job through it. They ultimately take up a job which did not require this higher education at all. So in a sense, though they may have taken the minimum period required to complete the course and may not have dropped out, the entire period of college education from their point of view was wasted.

There are still other persons, who get employment because of the course—the advertisement mentioned that as a minimum qualification—but find that the performance of duties in the job requires only a small fraction of the knowledge acquired during the course. This fraction could easily be acquired in 3 months and so the remaining period of 1 year and 9 months may be considered to be unnecessarily spent in attending the college.

Facts Needed for Policy Making

To cut down the various types of wastage mentioned above the policy makers may decide to revise the courses. The purpose is to make the courses simpler so that the number of failures decrease, and also to cut down the total contents of the course so that instead of two years, it takes only one year to complete it. To take a decision it is necessary to find out, (i) which portions of the course are needed during a corresponding job; those portions have to be retained, and (ii) which are the portions which the students find too difficult, leading to a high failure rate, these may have to be eliminated from the course.

The policy-makers may also decide to change the admission policy, since they want to avoid admitting those persons who have a high chance of either failing or dropping out. For this, they would like to have some estimate of this probability which is related to (i) the candidates' past academic records, and (ii) the family background.

Of course there may be a number of other steps also to reduce the wastage, but for the sake of illustration we would confine our attention to these aspects.

Sources of Data

For changes in courses one source can be the examiners. From their experience they could point out the portions on which the students do not answer questions properly. Another source could be students who have failed or dropped out. They could point out the portions they found difficult to grasp.

Students who completed the course and are doing some job could tell the policy makers whether getting the job or efficient working in it had anything to do with the course. They could also tell us which parts of the course find an application in their jobs.

It is obvious that it will be too costly and time consuming to collect the data from every student, teacher and examiner. A complete census is out of the question; one has to resort to a sample survey.

A Brief Outline of a Suggested Sampling Plan

Sampling frames have to be collected for students who failed, dropped out or passed the course. For those who passed or failed, a source may be the list of examinees in the university with their results. It may be worthwhile taking a stratified sample of these two categories of students. For the persons who dropped out before completing the course, one has

to contact the colleges to find out the students who were admitted but dropped out.

One could take simple random samples from these lists, but for a survey where persons are to be interviewed this will be a costly way of sampling. The persons may be dispersed over a large area and travel will be time consuming and costly. It may serve our purpose to initially select a few colleges and, at the second stage, to select teachers and students of the selected colleges. This will cut down the travel expenses, provide the necessary sampling frames and possibly also allow us to get the background data of the students not only of those who would be interviewed for the courses but others to correlate their result with their academic records and family background for considering changes in admission policy.

Once it is decided to select a two-stage sample, the first-stage units being colleges, it may be worth while to stratify the colleges according to their results, i.e. according to wastage in terms of proportion of failures. This may help the policy-makers in identifying some of the reasons of failures by relating some characteristics of the colleges with the failure rates.

In selecting the students, stratification may be needed not only into passes, failures and dropouts, but also in terms of past academic record and rural/urban background.

This illustration of the role of sample surveys in education is not a plan for reduction of wastage in education, for which many more aspects would have to be considered. Nor is it claimed that the sampling plan suggested is the best. We have not gone into details of the design, the actual stratifications and allocation of the sample to the two stages and to the various strata. It is only an illustration to show that sample surveys may be needed and may be very useful in taking decisions about educational policy.

Once the decisions are taken and implemented, further surveys may be required to judge the impact of the decisions. Thus, wastage of different kinds have to be estimated at different points of time and related to the implementation of policy decisions. For this, sampling designs would resemble standard designs of experiment and implementation also done on experimental basis on a sample population only. A common policy for the entire state should be adopted only after analysis of this experimental type of survey.

Sample Surveys in Assessment and Evaluation

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The importance of sample surveys in assessment and evaluation cannot be denied. There is a need to make extensive use of the research approach in this field to secure evidences concerning the existing situation or current condition, to identify standards or norms with which to compare present conditions in order to plan the next step and to determine how to take up the next step.

There are many and varied situations which need systematic data over the years after regular intervals in this field to provide the data on issues like the following, based on which further studies could be developed to seek answers in controlled conditions.

1. Purposes of evaluation are not clearly defined or understood.
2. The present evaluation serves only the limited objectives of testing students in the cognitive domain.
3. The nature and quality of output of the educational system.
4. The effect of the present evaluation procedures on the teacher's initiative and how far they discourage spirit of experimentation.
5. Do present evaluation procedures, being dominated by written examinations, tend to favour those possessing better linguistic attainments ?
6. Nature of questions and question-papers set in examinations and how far they promote higher levels of learning.
7. The existing marking procedures and their influence on results.
8. A study of the stated and unstated criteria for judging the quality of question-papers.
9. Analysis of various forms of questions being asked in written examinations against predetermined criteria.
10. The psycho-social and economic implications of the prevailing system of evaluation.

11. Existing evaluation practices and their frequency.

Implications for the Sample Surveys

The problems stated above have a lot of implications for taking up sample surveys in the field of assessment and evaluation, covering quantitative and qualitative aspects. The census surveys are not required for such problems due to cost, time and utility factors.

Sample Studies

There are some sample studies (details of which are given below) conducted in the erstwhile Central Examination Unit, D.E.P.S.E. and Survey Unit of NIE which provide insight for taking up similar sample studies on a larger sample to generate region-wise data in this area.

1. A Study of Common Errors in English at the Higher Secondary Level

The study attempts to analyse the errors, both quantitatively and qualitatively, of the English language as found in the answer scripts of English Paper I of the Higher Secondary Examination of the Board of Education, Delhi, which contained questions on General English, barring three questions on functional grammar. Only five questions were taken into consideration for this study, i.e. questions on essay, letter, precis, translation and framing of sentences with idioms.

For the purpose of this study some 92 answer-scripts of English Paper I were obtained from the Board's office. The answer scripts were taken on a random sample basis. The lowest score in this sample was 9 and the highest was 42 out of 75. There was none who scored 60 per cent or more marks.

The common errors found in these 92 answer scripts were carefully located and counted. For the sake of convenience the areas of investigation were restricted : (a) Errors of grammatical structures, (b) errors of words, phrases and idioms, (c) errors of punctuation, and (d) errors of spelling.

The analysis shows that errors of grammatical structures are predominantly pronounced in these pupils, writing, with spelling errors coming next in frequency, the percentages being 45 per cent and 29 per cent of the total errors, respectively. Lexical errors and misuse of idioms find the third place and constitute about 19 per cent of the total errors. Comparatively speaking, errors of punctuation with 5 per cent of the total errors are not significant enough to cause alarm. The analysis

shows that verbal errors ; (i) past form of the principal verb used with an auxiliary verb in the past tense ; (ii) omission of the past participle, present participle ; (iii) use of the past participle, present participle with 'to' ; (iv) wrong sequence of tenses ; (v) omission or addition of auxiliary verbs; (vi) wrong use of tenses—the present tense for the past, the past tense for the present, etc. ; (vii) wrong use of transitive and intransitive verbs, and (viii) omission or addition of infinitives—loom the largest in this area of mistakes, along with errors in the use of articles coming next in frequency, percentages being 50 per cent and 19 per cent, respectively.

In the area of lexical errors the first place goes to the abuse of phrases and idioms with about 50 per cent of the total errors. Next in frequency are words wrongly used with 43 per cent.

2. An Analytical Study of Answer-scripts of a Mathematics Question Paper

A study of the answer-scripts of a Mathematics question paper, set at the Higher Secondary School Certificate Examination by a Board of Secondary Education, was undertaken with a view to finding out candidates, preferences to optional questions, their performance and typical errors committed by them.

This study is based on a limited sample of only 74 answer scripts of the Mathematics paper available in the Board's office.

Preferences to Questions : After ranking answer-scripts according to marks, the high, low (27 per cent each) and middle groups were made and preferences of candidates in each of these groups were noted. It is observed that (a) candidates from the high group attempted quite a large number of (on an average 8.25 out of 10) full questions, and few (1.65 out of 10) part questions, while candidates from the low group attempted fewer (on an average 3.50 out of 10) full questions and almost an equal number (3.25 out of 10) of part questions, (b) more candidates from the high group attempted questions all over the paper than those from the middle and low groups, (c) Lower Algebra is the most popular, then come mensuration and Arithmetic; Statistics is the least popular.

Performance on Individual Questions : Performance of candidates from the high, middle and low groups, on individual question-parts and on subject areas were calculated and analysed. It is observed that (a) performance of candidates from the high and middle groups on questions carrying two marks are, by and large, equal while the performance of the low group is better on questions carrying two marks than on those carrying three marks, (b) performance of candidates from the high group are consistently high in all the subject areas ; while those from the middle and low groups vary to a large extent from area to area. This

shows that bright pupils study all the portions of the syllabus, while the average and below average pupils concentrate on a few only, (c) the average score per pupil on the question paper is 23.9 out of 50.

Difficulty Value of Questions : It is observed that (a) difficulty value of 3-mark question parts varies from part to part, so also of 2-mark parts. The variation in case of 3-mark questions is from .17 to .57 and that of 2-mark questions from .15 to .40, in case of Section A and for 3-mark questions is from .13 to .67, for 2-mark questions from .20 to .75 in case of Section B, (b) on comparing difficulty value of question-parts with marks allotted to each, only four questions out of 11 appear to be balanced. In some cases the difficulty value of 3-mark questions is more than that of 2-mark questions, (c) for the high and middle groups, there is no difference in difficulty value of 3-mark and 2-mark questions, but for the low group, 3-mark questions are more difficult than 2-mark questions, (d) 'Problem Solving' is the most difficult and square roots are the least difficult, (e) between statistics theory and practical, the latter appears to be easier, and (f) this average difficulty value of the question paper is .52.

Discrimination : As an index of discrimination, the difference of difficulty values on the high and low groups of candidates in respect of 3-mark and 2-mark questions was determined. It is observed that : (a) the average discrimination of 3-mark questions is .58 and that of 2-mark questions is .44. Hence 3-mark questions appear to be better discriminators than 2-mark questions, and (b) by and large, questions on Lower Algebra discriminate better than these on Arithmatic or Statistics.

3. Sample Study of Failures in Boards of Secondary Examination

This study is designed as a survey type investigation into the problem of large scale failures at the Secondary School Certificate Examination with the objectives : (a) to locate areas of difficulty for the Secondary School pupils, and (b) to throw light on an improved method of declaring results so as to eliminate the large scale failures without seriously lowering the standards.

The Sample : The sample is drawn for tabulation registers of the eight Boards included under this study. For examination held in 1962, a sample of 9,277 candidates is taken by drawing every twentieth roll number from the Boards of Kerala, Gujarat and the four different areas of the present Mysore State. For the examination held in 1963, the sample size 24,202 consists of 50% samples from the Boards of Maharashtra and Rajasthan, 3% from the Boards of Bihar, 1% from Uttar Pradesh and 100% from the Central Board of Secondary Education, Delhi. The data supplied by six other Boards is also taken for a

category-wise study of the results.

A comparison of the universe and the sample as regards the percentage of pass for the regular and private candidates shows that the differences are not significant. This establishes the validity of the sample.

Summary of the Findings

(a) The percentage of candidates securing good division has perceptibly decreased in 1963 and this needs further probe.

(b) The compartmental examinations conducted by certain Boards do not seem to make much difference to the large scale failures as the percentage of candidates who would have benefited by this were 26 per cent in 1962, and 31.5 per cent in 1963 of failed candidates, while the maximum failures in 1962 and 1963 are in the group of two subject failures. Therefore, if the compartmental examination is to benefit the majority of failures (i.e. about 60 per cent) it has to be open to all failure in two subjects.

(c) The popular belief that the majority of failure is due to failure in English alone is not sustained by the study as it is found that only 6% to 8% failed in English alone.

4. Study of Failures in Home Examinations in some schools of Delhi

The study was carried out to find out the extent of failures in the secondary schools of Delhi from Classes VI to X.

Procedure : The study was based on sample composed of students from 20 higher secondary schools of Delhi, representing a cross-section as detailed below.

- (a) 4 Schools with 80 per cent or above results at the public examinations of 1961. 12 Schools with results between 50 per cent and 80 per cent and 4 schools below 50 per cent.
- (b) 10 aided and 10 government-owned schools.
- (c) 8 boys and 8 girls and 4 mixed schools.

Data : The data were drawn from the annual promotion examination records of these schools for the year 1962.

Observations : The data of detained students interpreted class-wise indicate the following trends.

(a) Classes IX and X register a much higher percentage of failure than the other classes. This may be attributed to the larger number of subjects offered and also a stricter attempt to select students for the final Class XI examination.

(b) In Classes VI and X, the percentage of failure is slightly higher

than the other classes in the middle and higher stages respectively, whereas in Class VIII percentage of failure is the least, the reason being probably attributed to students coming from other schools, particularly primary and middle.

(c) The total failure percentage from Class VI to X stands at 23.1, which means that roughly 1/4th of the pupils repeat the class at this stage. Class-wise distribution of failures over subject-combinations indicates as follows.

(a) The most frequent failure is in three subjects with percentage of 27.7. Double subject failures account for 17.2. Four-subject failure is 23.3.

(b) Only a small percentage of students have failed in six and seven subjects.

(c) Single subject failure is more marked in Class X than in any other class.

(d) In all the classes except Class VI, three-subject failure registers the maximum number.

The data of detained candidates failing in different subjects under different subject-combinations from Classes VI to X indicate the following trends :

(a) English and Mathematics seem to be the only subjects which account for the largest number of one subject failures.

(b) Among higher combination failures, English and Mathematics again account for a very high proportion of failures in all the classes.

(c) In Class VI, Mathematics registers the largest number of failures, while in Classes IX and X its place has been taken by English.

(d) Other subjects such as Drawing, Crafts, Music, Hygiene, in the lower classes do not appear to cause many failures.

(e) Optional subjects such as Economics, Chemistry, Physics and History, have fairly high percentage of failures, although it is only about 1/5th of the failures caused by English.

The study indicates that : (a) the rise in the percentage of failures in Classes IX and X also indicates that the students are not suitably prepared in Classes VI to VIII to cope with the higher secondary syllabus. Efforts, therefore, need be directed towards bringing about a better coordination between the middle and higher secondary syllabuses; (b) the wastage at the higher secondary stage is appalling. It points to the need for immediate improvement both in teaching and evaluation practices; and (c) English and Mathematics account for a sub-

stantial percentage of failures and effective measures need be adopted.

5. Analysis of Replies to the questionnaire : Appendix 9 and 10. Report of the Committee of Examinations, Central Advisory Board of Education, Ministry of Education and Social Welfare, N.C.E.R.T., 1971.

(Appendix 9 contains analysis of replies to the questionnaire and Appendix 10 a typical reply to questionnaire. Both reports are examples of sample surveys).

The Chairman of the Central Advisory Board of Education appointed a Committee on examinations in 1970 to examine malpractices and eruption of violence during the progress of an examination or after an examination. A questionnaire was drafted to obtain opinion from a large section of concerned persons and agencies. About 83 sets of replies were received which were analysed and results of the analysis have been presented in the Report. Replies on issues regarding public examinations provide interesting feedback which may help in reducing magnitude of malpractices in the country and improving evaluation procedures.

6. Survey of Secondary School Teachers in India : Teachers' Views on National Integration, 1969-70, DPESU, NIE, NCERT, New Delhi, 1971.

One of the problems which India has been facing is that of National Integration. The data processing and Educational Survey Unit undertook the sample survey "Teachers Views on National Integration" as a part of a bigger survey "Survey of Secondary School Teachers in India" on a sample basis in 1969-70. The sample survey was conducted on a restricted sample which was limited to teachers from (i) all the secondary schools of a rural community development block ; (ii) all the secondary schools within the municipal limits of two towns ; (iii) 5 per cent secondary schools within the municipal limits of a city ; and (iv) all the secondary schools located within the municipal limits of the headquarters of the Union Territories. The teacher, being pivotal in education, has to play a significant part in developing correct type of attitudes among pupils from the point of view of national solidarity to counteract negative tendencies emerging in the national life. This type of survey provides evaluative data indicating the areas which may be undertaken for systematic development and evaluation.

Suggested Sample Surveys in Assessment and Evaluation

As sample surveys provide baseline data which can be used to take

up corrective measures to rectify imbalance in standards in different regions of the country, the following sample surveys emerging from the concept of evaluation and sample surveys already undertaken are suggested which may contribute to increase reliability and objectivity in evaluation.

1. Proportionate weightages given to different modes of assessment which include weightages to periodic and annual assessments, to different types of tests, to different types of questions and weightages to subparts of oral tests and practical work by different schools in the country at different school stages.
2. A study of answer scripts in different subjects to study common conceptual and structural errors committed by students.
3. Analysis of answer scripts to study examiner variability in order to develop standard instructions for examiner to minimise examiner variance in marking different subjects.
4. Comprehensive study of results on sample basis to study the maintenance of standard by Boards.
5. Studies on malpractices on sample basis can indicate exact magnitude of the problem which cannot be ascertained otherwise.
6. Analysis of question papers on sample basis to find out content coverage and weightages to objectives and sub-topics of content.
7. Analysis of cumulative record cards of different categories of schools on sample basis to design comprehensive record card in order to provide diagnostic feedback.

A Review of Educational Surveys in India

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Introduction

The history of surveys and studies in the field of education at the national level is not very old. Prior to 1957, isolated studies were conducted by some universities with a limited coverage but the first educational survey at the all-India level was conducted only in 1957. The studies conducted by the universities are by their very nature bound to be academic in nature and theoretical in approach. Moreover, even if the research were to be applied or developmental in nature, it would not have been possible for individual researchers to launch comprehensive global studies because of effort and resources it would demand. Launching of developmental programmes for education required base-line data which would help in the formulation of realistic plans and required a systematic survey to take the stock of what was available and what more needed to be done. In view of these facts, the first survey was conducted by the Ministry of Education, Government of India. A series of four all-India educational surveys has been conducted so far, of which the first two have dealt mainly with educational facilities, enrolment and teachers. The third one was very comprehensive and covered all types and forms of education—from pre-primary to university; general and professional and vocational; formal and non-formal; educational administration; cultural education, etc. The fourth one was again limited in scope and concerned itself with school education.

The present review relates to the surveys that cover the following specific areas.

1. Educational Facilities
 - (a) General
 - (b) Special Schools
 - (c) Unrecognised Schools
2. Teachers and Teacher Education

3. Educational Wastage and Stagnation
4. Educational Administration
5. Educational Achievement
6. Technical and Vocational Education
7. Miscellaneous

1. Educational Facilities

(a) General

1.1 *Intensive study of Blocks with reference to Educational Development, D. N. Abrol and Others, Mimeographed (1969), NCERT.*

It was not possible to consider certain items of information like buildings, physical facilities, etc. in detail in course of the Second All-India Educational Survey. Therefore, it was decided to conduct intensive surveys in some selected blocks with the following objectives.

- i. To study the origin of educational facilities ;
- ii. to study growth and development of educational facilities ;
- iii. to study the existing educational facilities with reference to the historical, economic and cultural background of a block.

The survey was conducted in the following four community development blocks :

- i. Sadar Block, District Bilaspur, Himachal Pradesh.
- ii. Shahpur Block, District Bhilwara, Rajasthan.
- iii. Bihta Block, District Patna, Bihar.
- iv. Badnawar Block, District Dhar, Madhya Pradesh.

1.2 *Comprehensive Survey of Education in Manipur (1972-1973), R. G. Misra and Others, printed by Govt. of Manipur*

The purpose of the survey was to make available to the Government of Manipur data on various aspects of education which would have been helpful to them in taking policy decisions and in formulation of plans for educational development.

The main objectives of the survey were as under :

- i. To make a status study of education in all its aspects and for every stage of educational ladder right from pre-primary to university level ;
- ii. to identify the most pressing problems of education in the State ;
- iii. to study the ways and means of tackling these problems.

An attempt was made to cover all aspects of education in Manipur

including general vocational technical and professional education, educational administration and planning. These aspects were studied in the background of historical development. The survey attempted an investigation into availability of educational facilities, teachers, syllabi, textbooks, school buildings, etc. It has also gone into examination and evaluation, administration and supervision, innovations and educational reforms.

1.3 Intensive Study of Provision and Utilisation of Schooling Facilities in Selected Blocks (three Mimeographed Reports)

This study was undertaken as a collaborative project by Ministry of Education, Planning Commission and the NCERT to study the availability of educational facilities and their optimum utilisation at the elementary stage in three rural Community Development Blocks in one district each from Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Orissa, Rajasthan and Uttar Pradesh. In order to achieve this objective the investigation tried to study the following aspects :

- i. Condition of existing elementary schools in respect of physical facilities like buildings and instructional accommodation, availability of libraries, teaching aids, etc.
- ii. Time allotted to instructional and other activities in the school time table.
- iii. Teachers, their qualifications, work load.
- iv. Attendence in relation to enrolment and enrolment of girls and Scheduled Castes and Scheduled Tribes.
- v. Incentives like scholarships, free supply of uniforms, etc.
- vi. Enrolment and transfer rates.

(b) Special Schools

1.4 Survey of Junior Technical Schools, K.N. Hiriyanniah and Others, Mimeographed (1967), NCERT.

The objective of the Survey was to study the growth of these institutions in the country, physical facilities and plant equipment such as buildings, hostels, playgrounds, etc. available with them ; admission procedures followed ; intake capacity and out-turn, fees, stipends, staff and their qualifications, etc.

1.5 Survey of Institutions for Physically Handicapped in India—Blind, D.C. Upreti and Others, Mimeographed (1968), NCERT.

The survey of the institutions for the education of the blind was undertaken with the following objectives :

- i. To collect information about the existing schools, training institutions for the blind adult including workshops and teacher training institutions in the country ;
- ii. to collect the following information from the various institutions :
 - a. Their location, management, building, residential facilities, equipment and library facilities.
 - b. The course followed in schools, both for general education and crafts.
 - c. The admission procedure laid down by schools.
 - d. The enrolment at various levels of education: primary, middle and secondary, for the year 1965-66, 1966-67 and 1967-68.
 - e. The socio-economic status of the parents of blind children receiving education in the institutions.
 - f. Qualifications, training and pay scales of the teaching staff.
 - g. The financial position of the institutions, especially the grants received by the private aided institutions from various agencies like Central Government, State Governments, managements, donations from individuals, etc.
 - h. The co-curricular activities undertaken by the institutions. Also the follow-up activities planned by the institutions and the employment prospects for the pupils after completion of their courses.

- 1.6 *Survey of Institutions for the Physically Handicapped in India—Deaf, Mute and Dumb, K.N. Hiriyaniah and Others, Mimeographed (1968), NCERT.*

The objectives of the survey were similar to those of the survey of institutions for the blind.

- 1.7 *Survey of High/Higher Secondary/Multipurpose Schools offering Technical (Engineering) Stream/Group/Subject under Elective/Optional Diversified Course, K.N. Hiriyaniah, Mimeographed (1968), NCERT.*

Though the objectives of survey are similar to those of the two previous surveys, it makes a detailed survey of syllabi, staff, equipment and physical facilities, etc. Since there is much variation between the States, the details have been given state-wise in the report.

- 1.8 *Survey of High/Higher Secondary/Multipurpose Schools offering Agriculture Stream/Group/Subject under Elective/Optional Diversified Course, K. N. Hiriyaniah and Others, Mimeographed (1968), NCERT.*

The report on the surveys has been written on similar lines and covers all aspects that were studied in case of the previous survey.

(c) *Unrecognised Institutions*

- 1.9 *Survey of Unrecognised Institutions offering Pre-primary and Elementary Education, P. N. Arora and Others, Mimeographed (1972), NCERT.*

The survey conducted in Delhi and the twin cities of Hyderabad and Secunderabad intended to study the management, enrolment, teachers, equipment, instructional programmes, assessment procedures in these institutions. In all about 200 institutions were covered in the survey.

- 1.10 *Survey of Unrecognised Institutions offering Education at Secondary Stage, R.R. Saxena and Others, Mimeographed (1972), NCERT.*

The survey was conducted in Delhi covering the same aspects of these institutions as in case of 1.9.

- 1.11 *Survey of Unrecognised Educational Non-director Establishments, NSSO.*

National Sample Survey Organization of the Government of India envisaged to undertake the above survey in course of its 34th round to identify such establishments, and to study the nature and level of courses offered, type of ownership, income and expenditure, enrolment, teaching and non-teaching staff, etc.

2. Teachers and Teacher Education

- 2.1 *Teachers—1965, K.N. Hiriyaniah, Mimeographed (1967), NCERT.*

The report is based on the findings of the Second All-India Educational Survey which gives information about teachers teaching at different stages/schools, their qualifications, training, experience, etc.

- 2.2 *Survey of Colleges and Institutes of Physical Education (1967), K.N. Hiriyaniah and Others, Mimeographed (1968).*

The objective of the survey was to study the growth of these institutions in the country; physical facilities and plant equipment such as buildings, hostels, playgrounds, etc. available in them for instructional purpose; admission procedures followed; intake capacity, input and output of trained personnel ; fees, stipends, income and expenditure ; and

the staff-sanctioned strength and that actually working, their qualifications, experience, etc.

2.3 Second National Survey of Secondary Teacher Education in India, B.N. Pandey and Others, Printed (1969), NCERT.

The objectives of the survey *inter alia* included the study of the following :

- i. Growth of post-graduate teacher education institutions in India, their location, nature, management, etc.
- ii. Enrolment, output, dropout and wastage in teacher education.
- iii. Academic problems—syllabi and courses of study, practice teaching, etc.
- iv. Evaluation system of theory and practice teaching.
- v. Building and equipment, libraries, laboratories, workshops, A.V. Aids, graphic aids, etc.
- vi. Academic staff—qualifications, work load, experience, salary scales, service conditions, etc.

2.4 National Survey of Elementary Teacher Education in, India, C. Mehra and Others, Printed (1970), NCERT.

The objectives of this survey were similar to 2.2. The survey has also gone into the study of finances, inspection and plans for development.

2.5 National Survey of Teacher Education at Elementary Level, Kamla Arora and Hoimanti Dasgupta, Printed (1977), NCERT.

The objectives of the survey were similar to those of 2.12.

2.6. Survey of Secondary School Teachers in India : Reaction of Teachers Towards Teaching Profession—A Study (1969-70), K.N. Hiriyaniah and Others, Mimeographed (1971), NCERT.

2.7. Secondary School Teachers in India (Teachers-Preliminary Report), K.N. Hiriyaniah and Others, Mimeographed (1972), NCERT.

2.8. Survey of Secondary School Teachers in India (A Preliminary Report on Perception of Teachers Revealed by the Heads of the Institutions—1969-70), R.R. Saxena and Others, Mimeographed (1972), NCERT.

2.9. Survey of Secondary School Teachers (Teachers' View on National Integration 1969-70), K. N. Hiriyaniah and Others, Mimeographed (1971), NCERT.

The Survey was conducted on a sample basis covering all the States and all the Union Territories except A. & N. Islands, Lakshadweep. The objectives of the survey were to study

- (i) The qualifications, both academic and professional, experience and age at first entry into teaching profession of teachers.
- (ii) Socio-economic background of teachers including their indebtedness.
- (iii) Work load of teachers.
- (iv) Competence of teachers teaching different subjects.
- (v) Service conditions including facilities for professional growth.
- (vi) Teacher-community relationship and relationship of teachers with other colleagues in the school.
- (vii) Stability and mobility of teachers within and outside the profession, school-wise and profession-wise.
- (viii) Reaction of teachers to the profession and their professional problems.
- (ix) Teachers' views on National Integration.
- (x) Perception of teachers revealed by heads of the institutions.

Secondary schools were selected at the first stage of sampling. At the subsequent stage teachers from these schools were selected for the survey.

2.10. Teachers, M.B. Buch and Satvir Singh, Printed (1980), NCERT.

Information about teachers was sought through two questionnaires—one relating to schools and other to teachers—and the report covered the following points.

- (i) Number of teaching posts sanctioned and teachers actually working
- (ii) Age, qualification and experience of teachers
- (iii) Teacher competence and utilisation
- (iv) Inservice training—participation of teachers in summer institutes and workshops
- (v) Service conditions—tenure of appointment and emoluments
- (vi) Mobility of teachers within the profession and outside.

3. Educational Wastage

3.1. Wastage and Stagnation in Primary and Middle Schools in India, R.C. Sharma and C.L. Sapra, Printed (1969), NCERT.

The National Council of Educational Research and Training in collaboration with the Office of Education of the Department of Health, Education and Welfare of the United States Government undertook this study in 1964 with the following objectives.

- (i) To ascertain the incidence of wastage and stagnation at the primary and middle stages of education.
- (ii) To analyse the causes of wastage and to determine the relative importance of each cause.

The study covered 92 schools in Maharashtra, Punjab, Rajasthan, Delhi and Himachal Pradesh.

4. *Educational Administration*

4.1. *Surveys of Educational Administration in various States and Union Territories—Third All-India Educational Survey, Printed (1975), NIEPA.*

National Institute of Educational Planning and Administration formerly known as Asian Institute of Educational Planning and Administration, or National Staff College for Educational Planners and Administrators, was entrusted with the survey of educational administration in various States and Union Territories and at the Centre under Third All-India Educational Survey. Objective of the survey was to find out the present position of educational administration in Indian States in terms of administrative set-up at the secretariat, directorate, regional/divisional (wherever it existed), district and block levels and functions like planning, organization, administration, direction, supervision, inspection and evaluation. The scope of the survey is, however, confined to the study of governmental set-up and its function in relation to general education from pre-primary up to post-graduate and research levels. A series of State-wise reports on these aspects have been published covering almost all the States and Union Territories including the report on educational administration at the Centre.

4.2. *Study of Administration of Elementary Education in Relation to Programme of Universalisation—Assam, R. C. Dass and P.M. Barua, Mimeographed (1979), NIEPA.*

The survey has been conducted in Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan and West Bengal, with the following main objectives.

- i. To study the adequacy of present administrative system for elementary education in relation to programme of universalisation of elementary education.
- ii. To suggest ways and means to reform, strengthen and streamline the administrative machinery with a view to improving the implementation of programme of universalisation.

- iii. To suggest measures for coordinating the efforts of other developmental agencies for successful implementation of programme of universalisation.
- iv. To suggest the frame-work for decentralisation of administration and involvement of community with the programme.

Educational Achievement

5.1. All-India Survey of Achievements in Mathematics, S.S. Kulkarni and Others, Printed (1970), NCERT.

This survey was conducted by the NCERT under contract with the Office of Education of the U.S. Government, Department of Health, Education and Welfare. Though the unit of observation was an individual student, the first stage sampling unit was school. About 1500 schools at each level—primary, middle and high were selected from all over the country except Bihar and Tamil Nadu (then Madras) for administration of final test. The main aims of the survey are given below.

- i. To identify geographical regions or school systems which were weak in terms of educational performance so that they could be given more help.
- ii. To identify the objectives of education that were fulfilled and those which were not, so that changes in methods of teaching could be introduced to improve quality of education and thereby ensure that the desired objectives are achieved.
- iii. To identify groups of students in a State of the country which were doing better so that the system of education followed there could be studied for the benefit of others.
- iv. To identify groups of students who were weak so that appropriate remedial measures could be introduced to bring them up. The survey was diagnostic in nature. The tools were tried for reliability and validity and norms developed on the basis of the tools adopted for the purpose.

5.2. The IEA Six-Subject Survey : An Empirical Study of Education in Twenty-one Countries, David A. Walker, Printed (1976), John Wiley.

As a step towards studies in educational measurement for comparative education this project to study the relationship between achievement, interests and attitudes of students and their environments at home and in school, was undertaken in twenty-one countries including India which participated in the programme.

6. Technical and Vocational Education

- 6.1. *Manpower Group Surveys (Engineering)—Review of Engineering Educational Institutions in India (1964), IAMR.*
- 6.2. *Technical Education in India—Survey of Facilities (Diploma Courses), 1964, Ministry of Education.*
- 6.3. *Technical Education in India—Survey of Facilities (First Degree Course), 1954, Ministry of Education.*

These surveys were undertaken to assess the stock of technical manpower available, facilities for training, per capita cost, etc. about the same time when the Education Commission (1964-66) was working on the manpower aspects of educational development.

- 6.4. *Technical and Vocational Education and Training—Third All-India Educational Survey (30 volumes), Printed (1975), IAMR.*

As part of the Third Survey, IAMR conducted state-wise surveys on technical and vocational education. State-wise reports on the findings and national report have been published by IAMR. The survey has covered the following aspects :

- i. Identification of institutions for technical and vocational education in relation to location, management, etc.
- ii. Courses of study offered, duration of courses, selection procedures, reservation of seats, etc.
- iii. Enrolment and out-turn,
- iv. Sanctioned and working teaching and non-teaching staff.
- v. Recurring expenditure.

7. Miscellaneous

- 7.1 *Survey of Textbooks in India—1969-70, R.G. Misra and Others, Printed (1971), NCERT.*

This was a national survey covering all States and Union Territories. It covered textbooks which have been nationalised, prescribed or recommended by the State Governments, State Boards of Education or Universities at the school stage.

The survey was conducted to study the following aspects about school textbooks.

- (a) Agencies responsible for production of nationalised textbooks, and those responsible for prescribing, approving and recommending textbooks at the school stage within Departments of Edu-

- cation, boards of secondary education or universities ;
- (b) Constitution composition and function of these agencies ;
 - (c) (i) Policies and procedures adopted in various States for preparation of manuscripts, review, printing, pricing and distribution of nationalised textbooks ;
 - (ii) Policies and procedures adopted in prescribing, approving and recommending textbooks by these agencies in the States ;
 - (d) Position of school textbooks during the year 1968-69—the number of textbooks prescribed at each state, etc ;
 - (e) Authors of school textbooks.

The survey report gives the position of textbooks up to October 1969.

7.2. Parent-Teacher Associations—A Survey, C.L. Kaul and Others, Mimeographed (1970), NCERT.

A Parent-Teacher Association is the most important link between school and home. The study covered through mailed questionnaires was intended to go into functioning of these associations, their activities, involvement and participation in school improvement programmes.

7.3. Women Teachers in Rural Areas (Pilot Survey in Rajasthan), K.N. Hiriyanniah and Others, Mimeographed (1971), NCERT.

A pilot survey on sample basis was undertaken in three districts of Rajasthan with a view to studying the qualifications, work load, service conditions, socio-economic background, problem faced, etc. by women teachers working in rural areas. The main emphasis was on the study of problems faced by them in a rural environment.

*A list of the reports on some of the educational surveys appears in the Appendix, pp, 103-9.

Conclusions and Recommendations of the Seminar on the Role of Sample Surveys in Education

The proposition that sample survey methods can be effectively used to provide valuable educational data was accepted by all the participants, and a number of useful suggestions were made by them on various issues relating to organisation of such surveys. Also, in the course of discussions, a number of areas were identified, in which sample surveys are needed. Certain recommendations were made on the role of different agencies and the plan of action for future. The conclusions arrived at by the Seminar and its recommendations are summed up below :

General Recommendations

1. Increasing use should be made of sample survey methodology for collecting educational information, since it provides quicker results, requires less resources and often provides more accurate information.
2. For providing educational statistics, for planning and other purposes, the following three approaches are required, (a) data on some basic items such as enrolment, number of teachers, etc. should continue to be collected annually by complete enumeration method. (b) detailed information on several other variables should be collected periodically on a sample basis, and (c) comprehensive surveys should be conducted once in 5 years or so on a census basis, to provide data on availability and utilisation of educational facilities, and other demographic educational variables, for planning of education at the grassroot level. These three approaches should complement one another, and together they should provide all the data needed for planning and administrative purposes.
3. Diagnostic and evaluative sample surveys should be conducted more frequently to provide information on causes and interrelationship of variables relating to crucial educational problems being faced by the country such as wastage in education, regional and other kinds of imbalance, difficulties in achieving universal elementary education, etc.
4. While organising sample surveys, due attention must be paid to the use of a proper sampling design and adequate checking of data that are collected.

5. Where possible, sample survey results should be compared with those of complete enumeration to provide a check on the accuracy of data. In large surveys, covering a number of items, an attempt should be made to process the data on more important items speedily for quicker dissemination of information on these items.

6. Sample survey of household may also be conducted from time to time to provide educational data which cannot be collected from schools.

7. There should be proper arrangements for maintenance of survey data and other survey records for possible re-analysis of data. Where possible, computerised data banks may be established.

8. There should be studies on methodology, cost, reliability, checking and supervision procedures, etc. for sample surveys in education, in order to improve their efficiency.

9. There should be occasional sample checking of educational data collected annually on complete enumeration basis.

10. Pilot projects may be taken up in the States to collect educational statistics on a sample basis.

Areas in which sample surveys are needed

The following areas and problems requiring sample survey approach to provide the required data were identified on the basis of papers presented and discussions held during the seminar.

a. Educational system

- i. Availability and utilisation of educational facilities (schools) for different levels and types of education.
- ii. Indicators of educational development for comparing one area or sub-population with another.
- iii. Educational wastage (repeaters and dropouts); retention at different school stages.
- iv. Educational level as related to a person's income and occupation.
- v. Impact of special educational programmes and schemes launched by states; monitoring and evaluation of such programmes.
- vi. Regional imbalances in education.
- vii. Studies of the people's attitudes, perceptions, etc. for designing of population education programmes.
- viii. Educational backwardness of girls; role and status of women in development of education.

- ix. Incentive programmes for students of Scheduled Castes/Scheduled Tribes and the impact of these programmes.
- x. Evaluation of curriculum, textbooks, etc. from the point of relevance and quality.
- xi. Effect of education on productivity.
- xii. Programmes of non-formal education, their, cost, effectiveness, etc.
- xiii. Spoken dialects and their relationship with languages in different areas of the country.
- xiv. Problems and educational facilities for pre-school children.
- xv. Educational facilities for tribal, remote and sparsely populated areas.
- xvi. Library facilities, availability of books and other reading materials for the community.
- xvii. Relevance of courses at secondary, higher secondary and university levels for jobs; employers, and students' perception of usefulness of the existing courses.
- xviii. Role of different agencies and voluntary organisations in providing education to the children of SC/ST and other backward communities.
- xix. Educational problems of SC/ST children—relevance of curriculum, wastage and retention, effectiveness of incentives, availability of teachers, etc.
- xx. Educational inputs and processes of imparting education.
- xxi. Educational mobility from one generation to the next; socio-psychological and psychological factors responsible for resistance to education in certain sections of population.
- xxii. Need and facilities for technical and vocational education; appropriateness of the curriculum for such education.
- xxiii. Educational facilities for physically handicapped children.
- xxiv. Facilities for physical education, games and sports.
- xxv. Procedures and staff for inspection, supervision and administration of educational institutions.
- xxvi. Parent-teacher associations; role of the community and relationship between schools and community.
- xxvii. Educational requirements of the community; attitudes and opinions of the community members on educational matters.

- xxviii. Inequality of educational opportunities.
- xxix. Skill and training requirements of the people in a given area ; employment situation ; manpower requirements.
- xxx. Use of mass-media (radio, television, films, etc.) in providing instruction; evaluation of their role and impact.

(b) *Financing and Cost*

- i. Pattern of expenditure on education in schools and unit costs.
- ii. Financing of education—sources of finance.
- iii. Private expenditure on education.
- iv. Expenditure incurred on education of the weaker sections of the society.
- v. Economic and other benefits of education ; return from investment on education.

(c) *Teachers*

- i. Qualifications, work load, salaries, housing, socio-economic background and other characteristics of teachers which may be related to their teaching efficiency.
- ii. Quality and effectiveness of teacher training programmes.
- iii. Qualifications of Science and Mathematics teachers.

(d) *Schools*

- i. Physical facilities (buildings, furniture, etc.) and teaching materials in schools—availability and utilisation.
- ii. Quality of education provided in different types of schools and its relationship with cost and other institutional variables.
- iii. Availability and utilisation of teaching aids in schools.
- iv. Classroom practices.
- v. Problem of single-teacher schools.
- vi. Pupil-teacher ratio ; average attendance in schools.
- vii. Hostel facilities—their capacity and utilisation.
- viii. Ancillary facilities and services provided in schools—health services; educational and vocational guidance ; mid-day meals ; school transport, etc.

- ix. Scholarships and fees ; free uniforms ; free textbooks, etc.
- x. Laboratory facilities and equipment for science teaching.
- xi. Library facilities in schools ; utilisation of library books.
- xii. Non-teaching staff in schools.
- xiii. Cultural and other extra-curricular activities in schools ; hobby clubs, science clubs, debating societies, etc.
- xiv. Physical facilities, enrolment and teachers in unrecognised schools.

(c) Students

- i. Age, home background and other characteristics of students, which may be related to their learning efficiency.
- ii. Socio-economic background ; educational and job aspirations of students.
- iii. Problems and educational needs of school dropouts.
- iv. Flow statistics based on student cohorts.
- v. Vocabulary of new entrants in schools.
- vi. Activities of school dropouts, and other out-of-school children ; follow up of school leavers (through tracer studies).

(f) Examinations

- i. Evaluation and examination procedures.
- ii. Examiner variability ; variation over institutions and relative standards of different examining boards/universities.
- iii. Study of students' answer scripts, response errors, etc. from the point of view of improving instruction and evaluation.
- iv. Achievement of students at different levels and in different subjects through standardised tests.
- v. Malpractices in examinations.

Recommendations on Organisation and Administration of Surveys

- 1. The machinery for collection of educational statistics and for conducting educational surveys should be strengthened in the states. Where possible, a separate unit should be set up for conducting large scale educational surveys. It should have both qualified statisticians and educationists on staff.

2. There should be some staff at the district level to assist in collection of statistics for checking of information, tabulation of data, etc. for both census and sample survey programmes of data collection.
3. National Sample Survey Organisation should collect data on educational variables, particularly from households, from time to time, depending on the requirements of data for policy formulation and planning.
4. There should be adequate provision for training the staff at the state and district levels in sample survey methodology and procedures of data collection and compilation.
5. The Survey and Data Processing Unit of NCERT should be strengthened so that it may provide effective assistance to the States in organisation of sample survey, training of the staff at the State level and planning and execution of educational surveys in the States.
6. State Institutes of Education/SCERT's should be strengthened for conducting educational surveys, particularly of diagnostic and evaluative types.
7. At the state level, complete and up-to-date directories of educational institutions should be maintained to serve as sampling frames for surveys. Where necessary, a master-sample of schools may be prepared to serve as a frame.
8. A National Advisory Committee should be set up to advise the government and the concerned agencies on the educational surveys that should be conducted from time to time.
9. There should be State level advisory committees to advise the State governments on educational surveys to be conducted in the States.
10. A handbook should be prepared by NCERT on Sample Survey Methods in Education for the benefit of the staff in the States.

APPENDIX

List of Reports on Some Educational Surveys

<i>Sl. No.</i>	<i>Title of the Publication</i>	<i>Nature of Publication</i>	<i>Year of Publication</i>	<i>Author's</i>
1	2	3	4	5
1.	<i>Second All-India Educational Survey</i>			
1.01	Second All-India Educational Survey (Report)	Printed— priced	1967	M.B. Buch and others
1.02	Summary of the findings (Second All-India Educational Survey)	Printed— unpriced	1968	Staff of the Unit
1.03	Survey of High/Higer Secondary/Multipurpose schools offering Agriculture grant/Stream/Subject under elective/Optional/diversified course	Cyclostyled	1968	K.N. Hiriyaniah, S.M. Bhargava and others
1.04	Survey of High/Higer Secondary/multipurpose schools offering technical (Engineering) grant/Stream/Subject under elective/Optional/diversified course.	Cyclostyled	1968	K.N. Hiriyaniah
1.05	Survey of Junior Technical Schools	Cyclostyled	1967	K.N. Hiriyaniah and others
1.06	Colleges and Institutes of Physical Education (1967)	Cyclostyled	1968	K.N. Hiriyaniah and others
1.07	Survey of Institutes for the Physically Handicapped—Deaf, Mute and Dumb	Cyclostyled	1968	K.N. Hiriyaniah and others

1	2	3	4	5
1.08 Survey of Institutes for the Physically Handicapped—Blind	Cyclostyled	1968	D.C. Upadhyay and others	
1.09 Teachers (1965)	Cyclostyled	1967	K.N. Hiriyanniah	
1.10 Intensive Study of Blocks with reference to Educational Development	Cyclostyled	1969	D.N. Abrol, C.L. Kaul, P.N. Arora, R.R. Saxena and others	
<i>Other Surveys and Studies</i>				
2.01 Un-recognised Institutions offering pre-school and Elementary Education	Cyclostyled	1972	P.N. Arora and others	
2.02 Un-recognised Institutions offering education at Secondary stage	Cyclostyled	1972	R.R. Saxena and others	
3.01 Parent Teachers Associations—A Survey	Cyclostyled	1970	C.L. Kaul and others	
4.01 Women Teachers in Rural Areas (Pilot Survey in Rajasthan)	Cyclostyled	1971	K.N. Hiriyanniah, C.L. Kaul and others	
5.01 Survey of School Text-books in India (1969-70)	Printed— (unpriced)	1971	R.G. Misra and others	
6.01 Master Sample of Schools in India	Cyclostyled	1971	A.B.I. Srivastava and others	
<i>Teachers</i>				
7.01 Survey of Secondary School Teachers in India (Reaction of teachers towards teaching profession—A Study 1969-70)	Cyclostyled	1971	K.N. Hiriyanniah, C.L. Kaul and others	

1	2	3	4	5
7.02	Secondary School Teachers in India (Teachers Preliminary Report)	Cyclostyled	1972	K.N. Hiriyanniah, C.L. Kaul and others
7.03	Secondary school teachers in India (Analysis of School Schedules)	Cyclostyled	1971	K.N. Hiriyanniah, P.N. Arora, and others
7.04	Survey of Secondary School Teachers in India (A preliminary report on perception of Teachers revealed by the Heads of the Institutions) 1969-'70)	Cyclostyled	1972	R.R. Saxena and others
7.05	Survey of Secondary School Teachers (Teachers' View on National Integration (1969-'70)	Cyclostyled	1971	K.N. Hiriyanniah, R.R. Saxena and others
8.01	Comprehensive Survey of Education in Manipur (1972-73)	Printed by Govt. of Manipur	—	R.G. Misra and others
9.01	Facilities Available in Secondary Schools (A preliminary report)	Cyclostyled	1971	D. Basavayya
<i>Third All-India Educational Survey</i>				
10.01	Some Provisional Statistics on School Education	Printed— unpriced	1975	A.B.L. Srivastava, K.N. Hiriyanniah and others
10.02	Selected Tables of States and Union Territories (30-volumes—one for each)	Cyclostyled	1975	Staff of the Unit
10.03	State-Tables Volume-1 (30-volumes—one in respect of each State/Union Territory)	Cyclostyled	1975	Staff of the Unit

1	2	3	4	5
10.04	Some Statistics on School Education	Printed— unpriced	1977	K.N. Hiriyanniah and others
10.05	Work Experience in Schools	Printed— unpriced	1977	Govinda Rao and S.M. Bhargava
10.06	Educational Facilities and Enrolment (School Education)	Printed—priced	1979	K.N. Hiriyanniah and others
10.07	School Buildings	Printed— unpriced	1979	S.G. Bhatkulikar and S.C. Mittal
10.08	Hostel facilities for Scheduled Castes	Printed— unpriced	1979	L.R.N. Srivastava
10.09	Education Out-side School	Printed— unpriced	1979	H.B. Majumdar and C.L. Kaul
10.10	Teachers	Printed—priced	1980	M.B. Buch and Satvir Singh
10.11	Hostel Facilities for Scheduled Tribes	Printed— unpriced	1981	L.R.N. Srivastava and C.L. Kaul
10.12	Pre-primary Teachers Education	Printed— unpriced	1981	(Mrs.) R. Muridharan and R.R. Saxena
10.13	Institutions of the Physically Handicapped	Printed— unpriced	under print	R.R. Saxena
10.14	Pre-primary schools	Printed— unpriced	1981	Sarvir Singh

1	2	3	4	5
10.15 Teacher Education (Elementary and Secondary Teachers Training Institutions)	Printed— priced	under print unpriced	R.S. Lal, L.C. Singh, (Miss) Chanchal Mehra, S.M. Bhargava	
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10.17 Languages and Media of Instruction	Printed— unpriced	1981	M.G. Chaturvedi and Sarvir Singh	
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11.01 Stagnation and Drop out at Primary stage (1977)	Printed— unpriced	Printed (unpriced)	K.N. Hiriyanniah and others	
12.01 Intensive study of provision and utilisation of school facilities in selected blocks of Talgaon District (Maharashtra), 1977-79	Cyclostyled	1980	C.I. Kaul	

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12.02	Intensive study of provision and utilisation of school facilities in selected blocks of Bijapur District (Karnataka)	Cyclostyled	1980	S.M. Bhargava
<i>Fourth All-India Educational Survey</i>				
13.01	Some Statistics on School Education (Fourth All-India Educational Survey)	Printed—unpriced	1980	A.B.I. Srivastava, K.N. Hiriyanniah, S.M. Bhargava and others
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17.01	National Survey of Teacher Education at Elementary Level, NCERT	Printed—unpriced	1977	Kamla Arora Hoimanti Das Gupta

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